JUNE 13, 1936

Railway Age

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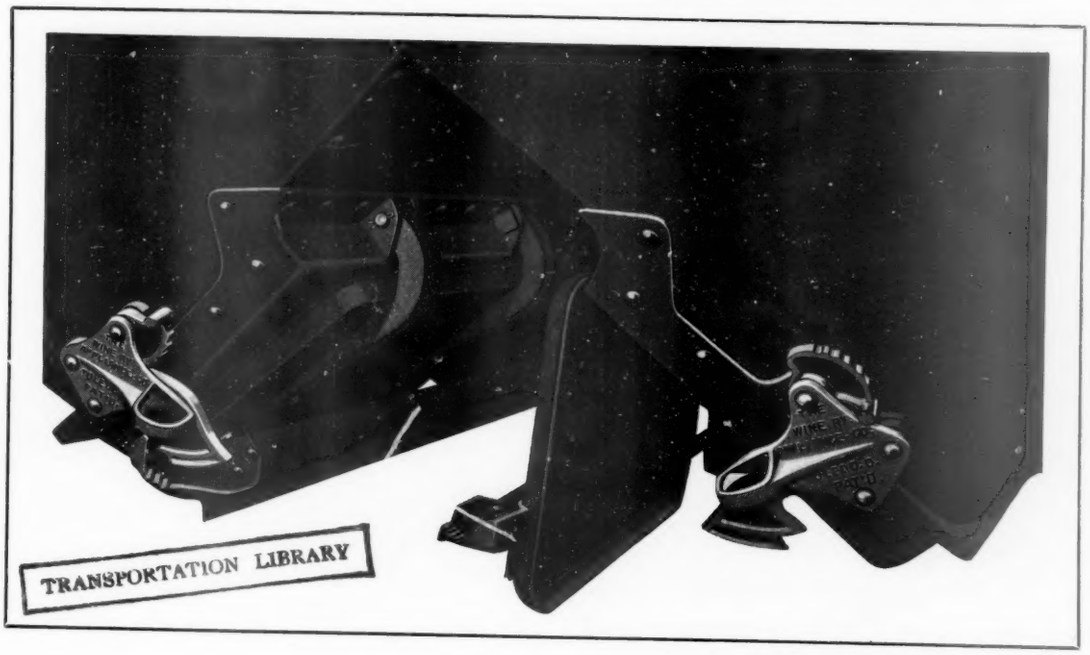

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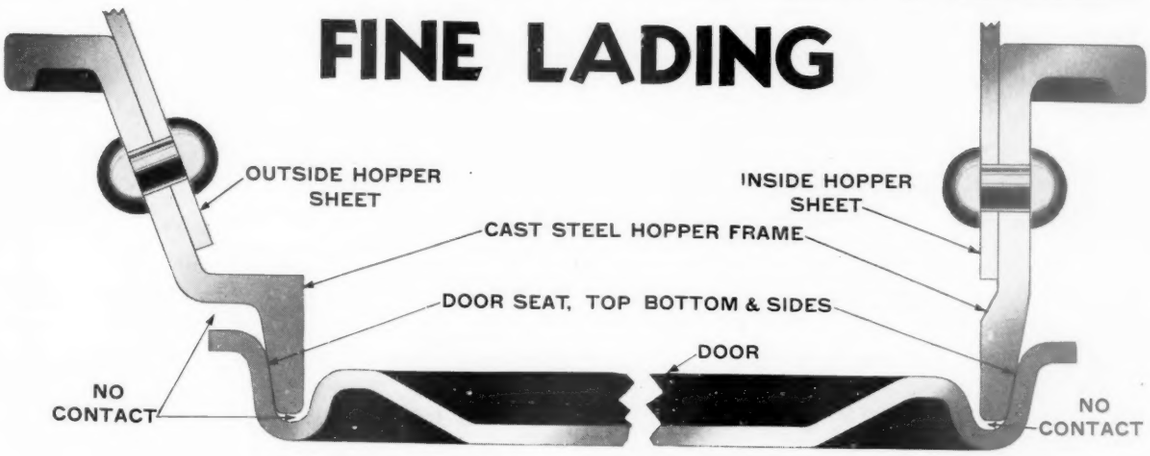

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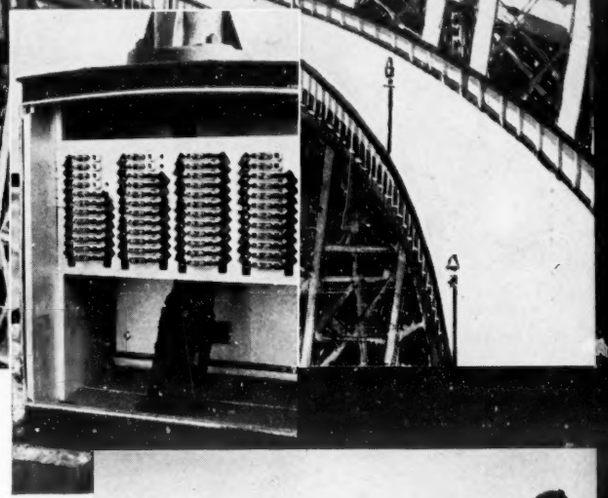

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Railway Age

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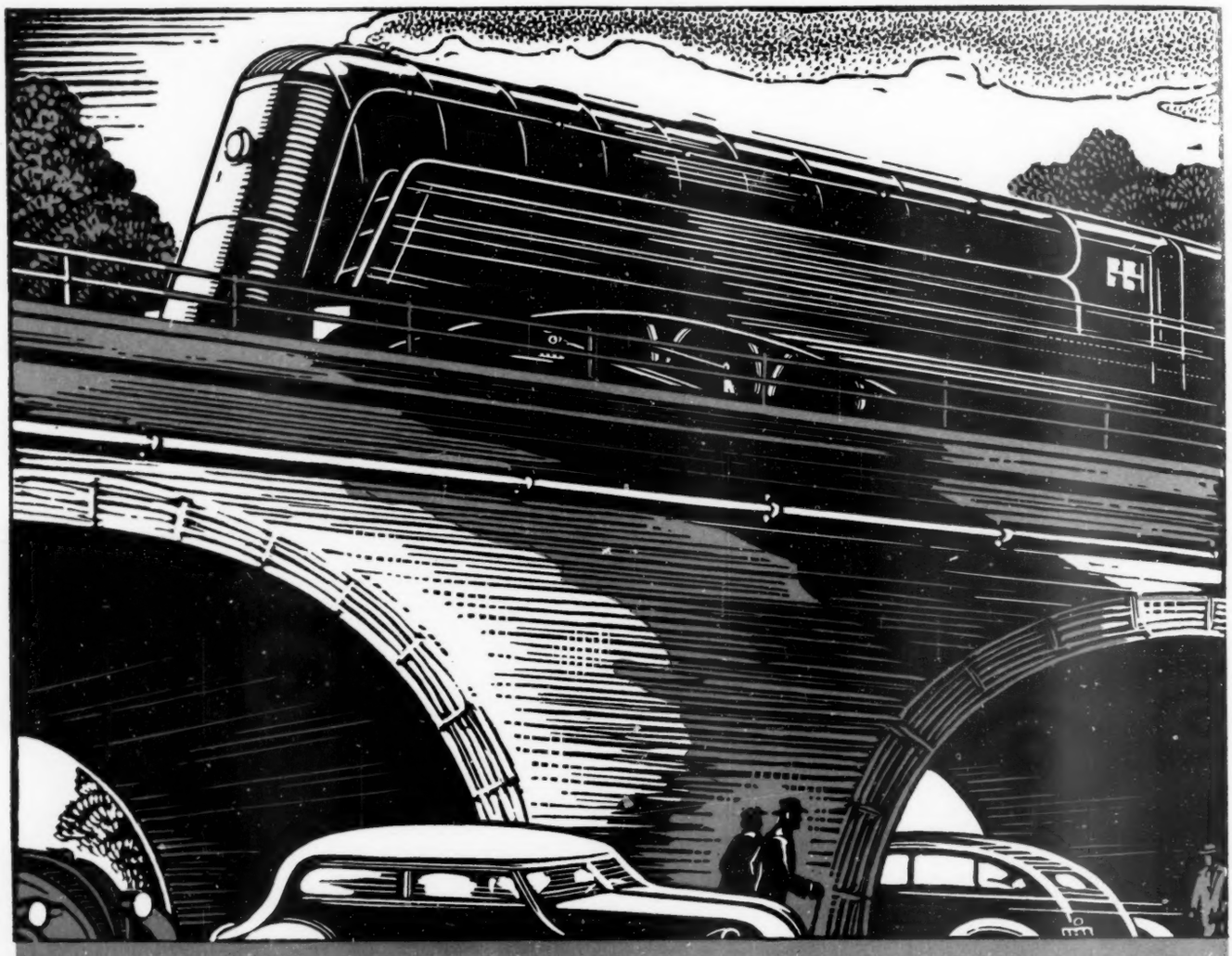

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RAILWAY AGE

Competition or Government Regimented Monopoly?

This editorial was written before completion of the Republican National Convention at Cleveland, but the two principal issues in the national political campaign which began this week had been determined long before the convention met. These issues are, first, private competitive enterprise versus a government-regimented planned economy, and, second, economy in government versus reckless government spending. The two issues are inter-related. The policies of the New Deal during the last three years have prolonged unemployment and relief rolls, and thereby created the apparent necessity of prolonged huge government spending for relief.

What was the real issue raised by NRA and AAA seems to have been recognized at their inception by hardly anybody excepting a few leading students of and commentators upon problems of government and economics. At first NRA was ostensibly to afford opportunity for "self-regulation" of industry. Then it was to constitute a "partnership" between government, business and labor. Many business leaders rushed into it because they believed "partnership" with government would strengthen their monopolies and monopoly practices, especially by legalizing price fixing. They rapidly learned that in such a partnership government would dominate business and politics would dominate government. Under the domination of politics and fallacious labor union economic theories, NRA became not so much a means of stabilizing prices and increasing business profits, as a means of increasing government interference with business—of reducing hours of work, advancing hourly wages, increasing costs of production, and curtailing profits. In consequence business welcomed its destruction.

Covernment-Regimented or Competitive Economy?

What some of the more intelligent students of and commentators upon political and economic problems saw from the beginning, and that most business leaders have as yet been slow or unable to perceive, was that the real issue raised by NRA was not merely that of a government-regimented economy versus a private enterprise economy, but that of a government regimented economy versus a private *competitive* economy. The word competitive is, in this connection, of vital importance. Alfred P. Sloan, Jr., president of General Motors, stated the real issue in a recent address when he said: "America must decide between two opposing principles of industrial operation: competition on the one hand, or regulation and ultimately regimentation by government on the other hand." If there are to be monopolies or monopoly practices, the industries in which they prevail must be regulated or regimented by government as under NRA or some other way. If there is not to be government regulation or regimentation of any particular industry, then there must be real competition in that industry.

The public should not and will not long stand for monopoly or monopoly practices subject to no government regulation. Business men will have to face this fact during the present political campaign, and it is a most interesting question as to what the actual attitude of many of them will be.

The New Dealers are consistent. They don't believe in competition. They believe in a planned economy, which necessarily involves monopolies to control the development and management of each industry and all industries to the end that production shall be perfectly balanced and the fruits of production shall be equitably divided among all those who participate in it. Such an economy can be managed only by government. Therefore, the New Dealers consistently advocate government control of all industry.

Business Not Consistent

Business is not equally consistent as yet; in fact, most business men are still completely inconsistent. "What each industry apparently wants," said the *Railway Age* in a recent editorial, "is no competition within itself,

but unrestricted competition among both those from whom it buys and to whom it sells." Business will have to become as consistent as the New Dealers if it is to beat them. It will have to recognize the fact that for it to advocate the "American system," and at the same time avowedly or tacitly favor monopoly or monopoly practices subject to no government regulation, is wholly inconsistent; that if there is not to be government regimentation there must not be monopolies or monopoly practices; and that the only alternative to monopoly or monopoly practices in any industry is competition within that industry.

Recognition of these facts raises some interesting questions regarding transportation. The railroads formerly had or were assumed to have, virtually a monopoly of transportation. Their regulation originally was adopted upon the assumption that competition would regulate wages, prices and profits within naturally competitive industries, and that regulation should be applied to monopolies to make their wages, rates, prices and profits conform to those of competitive industries. Within the last decade transportation as a whole has ceased to be anything remotely resembling a monopoly. But, while government has been helping to destroy every semblance of monopoly in transportation by aiding the development of competitors of the railways by water, highway and air with huge subsidies, it has been continuing and even increasing its regulation of the railways without extending comparable regulation to their competitors. In consequence, transportation has become not only the most highly competitive, but also the most over-expanded, industry in the country. What, then, should we do about it in future?

The "American System" and Transportation

If government had in the past enforced the principles of the true American system, it would have, first, prevented growth of monopoly and monopoly practices in naturally competitive industries, and, second, reduced its regulation of railways as competition with them increased. Clearly, it would not have stimulated competition with the railways by subsidies, and, at the same time, increased its regulation of them. But during the New Era of the Twenties monopoly and monopoly practices in naturally competitive industries increased as never before with little or no government opposition, and, at the same time, government stimulated the development of competition with the railways by subsidizing it while not relaxing in the least its regulation of railways. In other words, government policies during the New Era were, as to both naturally competitive industries and the railways, the exact opposites of the policies assumed by the true American system.

This had two different kinds of effects upon the railways—both adverse. It helped to maintain prices and encourage effective demands for advances of wages in the industries from which the railways had to buy manufactured products, the raw materials of manufacture, and fuel. The high wages paid in other industries were used in negotiations and arbitration proceedings as the measure of what the railways should pay, and caused maintenance and increase of railway wages. Thus, maintenance of prices and wages in other industries indirectly hindered reductions of railway operating expenses and rates. And meantime government policies, of continuing to regulate the railways, and of subsidizing and not regulating their competitors, diverted traffic from the railways. Thus the railways, largely or mainly as a result of government policies, suffered both from inability to reduce their operating expenses as they otherwise might have, and from losses of traffic that they would not have otherwise incurred.

The railways have suffered in the same ways from similar policies under the New Deal. The Roosevelt administration deserves credit for being the first to advocate some measures to equalize competition in transportation. But its policies have largely increased the operating expenses of the railways by causing advances in the prices and wages they must pay, and it has increased subsidization of competing carriers while failing to support the Pettengill bill, the most important measure introduced in Congress within a quarter century to relax railway regulation.

Monopoly or Competition in Transportation?

The railways have stronger reason than any other industry to favor restoration of the true American system because they have suffered and are still suffering more than any other industry from the virtual abandonment of that system, both under the Old Deal and the New Deal.

If restoration of competition within naturally competitive industries, rather than government regimentation of them, would be sound policy, what should be the policy applied in future to transportation, which has become in such large measure competitive? The first thing that should be done is to withdraw all subsidies in transportation by requiring carriers by water, highway and air that use public property provided by the taxpayers to pay adequately for their use of it. The American system contemplated not merely competition, but fair competition, within competitive industries, and obviously there cannot be fair competition within any industry in which part of the competitors are not aided by government subsidies while others are.

Assuming subsidies withdrawn from transportation, should regulation also be withdrawn? We believe if all subsidies were withdrawn that, while the railways would recover only part of the passenger business they have lost, they would recover practically all of the freight business they have lost. As this would restore to them virtually a monopoly of freight transportation, a continuance of railway regulation would be desirable. If, however, without the aid of subsidies, other carriers

were able to continue to compete effectively, then, in our opinion, regulation of transportation should be greatly reduced or entirely abolished. There can be no justification for government regimentation of any industry excepting to control monopoly or monopoly practices.

The Labor Monopoly

It is of vital importance in this connection to recognize that all monopolies and monopoly practices are not business monopolies and monopoly practices. Labor unions have sought, and are still seeking, very effectively to establish monopoly and monopoly practices in most industries for the supposed benefit of labor. The fixing of wages by monopolies and monopoly practices is as antithetical to the true American system as is the fixing of prices or rates by such means. There can be no restoration of beneficial competition in most industries, and especially in the transportation industry, as long as working conditions and wages in these industries are dictated by labor monopolies. This is a plain fact to which many of those who advocate a restoration of the American system find it politic to make no reference. If we are going to advocate a restoration of the American system let us advocate its restoration in full, recognizing all that is involved and all the difficulties in the way.

How Avoid Excessive Branch Line Abandonment?

Necessary as has been the abandonment of unprofitable branch lines, the policy of attrition is not one that can be viewed with satisfaction by anyone. If people will not use a railway line to an extent sufficient to cover its operating costs and taxes, then, for the protection of the remainder of the service, it must be abandoned. But this process is bound to have a depressing effect on main line traffic. Freight loaded on a truck because a branch line has been abandoned is only too likely to go all the way by truck.

To save a line threatened with abandonment because it does not earn operating expenses and taxes, it is obviously necessary either to reduce these expenses or to increase traffic. The effort has often been made to increase traffic though only occasionally with success. Attempts to reduce operating expenses and taxes do not always go as far as they might. A community threatened with the loss of railway service because of the failure of a line to earn taxes would often find a complete remission of such taxes to be a good investment, because when rail service is abandoned tax values of much adjacent property also disappears. Thus tax remission, if it were sufficient to remove the cause for abandonment of a line which would otherwise have to be scrapped, would often be a sound policy for the taxing authorities.

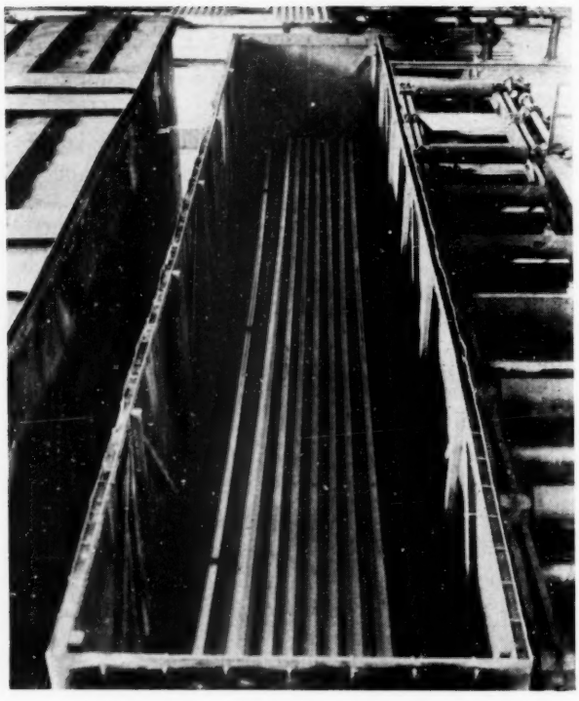
But in many cases much also might be done toward avoiding abandonments if railway operating costs for light service could be reduced. The Hindu caste system of organized labor whereby a separate employee has to be hired for each highly specialized class of work, though the volume of that class of work be ever so slight, is a leading source of high branch line operating costs. The caste system works comparatively little hardship on main lines where there is plenty of work for many employees, but it raises insuperable difficulties to the economical operation of branch lines. On such lines one or two employees who were willing to do a fair day's work as jacks-of-all-trades at the locally prevalent wage could keep in profitable operation a line which would be an impossible white elephant under the caste system of the union agreements. Some of the short line railroads are performing miracles in this respect, which, if they could be applied on branch lines of Class I railways, would keep railroad service for many communities which otherwise must lose such service.

We are not by any means advocating the continuance of branch lines which are hopeless losers, but we do believe that, before a railway gives place to motor transportation, the public interest requires first that the newer agency of transportation demonstrate its superior economy. Such demonstration is not possible while railways pay taxes and maintain wages and working conditions higher than those of competing truck lines. Whether it be possible to free branch lines from taxes and artificial labor restrictions or not, it would certainly be educational if estimates of such reduced costs were to be placed in evidence in abandonment cases. When a line has to be abandoned because the railway is taxed and the investment in the parallel highway is not, or because politics has burdened the railroads with above-the-market labor costs, then the public affected certainly ought to know these *real* reasons for its loss of rail service, and not attribute it to inherently superior efficiency of the motor vehicle.

Railway employees have quite as much interest in seeking a fair solution of this question as have either the railways or branch line communities. After all, it is sounder from the selfish standpoint of railway labor to keep two men employed at a variety of work on a branch line than to insist on supernumerary employees to the point where it is necessary to abandon the line and dismiss all employees. By absolute blocking, some branch lines could be restricted to one train and flagging could be abolished. Under such conditions trains powered by light internal combustion engines could be safely operated by one man, or two at the most. Needless to say such changes, together with tax remission, would put many "border line" abandonment projects definitely in the "black ink."

Recent Advances in Rail Manufacture

A discussion of some current improvements in mill practices designed to secure better service in track



One of the Delayed Cooling Boxes Employed in the Slow-Cooling Process of Rail Manufacture, Partly Filled with Rails

MUCH thought has been given to transverse fissures. What causes the disease? What is the cure? The last word has not yet been said as to the cause, but much has been done in the way of a cure.

Nearly ten years ago, Messrs. Sandberg of London, England, internationally known rail engineers, pointed out the probable connection between shatter cracks and transverse fissures. According to the Sandbergs, shatter cracks, which occur occasionally in rails as rolled, may act as the foci from which transverse fissures gradually develop within the heads of rails during service. According also to the Sandbergs, "one of the chief causes" of shatter cracks are stresses caused by "a substantial difference of temperature during cooling between the outside metal and the interior metal, more particularly of the big mass in the head of the rail."

They believed that if the occurrence of shatter cracks could be prevented, the transverse fissure problem would be solved. Accordingly, they instituted an exhaustive series of experiments in this direction. Before the end of 1928 they had developed a method of controlled cooling at the Cargo Fleet Iron & Steel Works at Middlesbrough, England, which appeared to have effectively prevented the occurrence of shatter cracks. In the succeeding year they introduced this method into the United States, where, after a period of several years' experimentation on the higher carbon American rail by the Bethlehem Steel Company, the process was adopted by Bethlehem on a commercial scale. More recently the method has been adopted by the Inland Steel Company and the Colorado Fuel & Iron Company.

Other investigators, Gerhardt of the Bethlehem Steel Company and Mackie, of the Dominion Steel & Coal Corp., Ltd., of Sydney, Nova Scotia, likewise diagnosed shatter cracks as the principal cause for transverse fissures and, like the Sandbergs, found the cure of shatter cracks in the controlled cooling of rails. At the present time the last mentioned company is subjecting its entire output of rails to controlled cooling.

The ideas and practices of the Sandbergs, Gerhardt and Mackie have been confirmed in essentials by recent scientific investigation. The work, for example, conducted at the University of Illinois, under the auspices of the Association of American Railroads and the Rail Manufacturers' Technical Committee, is especially significant.*

In this work at the University of Illinois, equipment was used to subject rails, under laboratory control, to conditions simulating those of actual service and thus to develop transverse fissures in those rails having susceptibility thereto. "Tests of rails under rolling loads" employing this equipment "have yielded fairly convincing evidence that fissures in rails usually originated at shatter cracks which formed in the rails during the process of manufacture. All laboratory-developed fissures were in shatter-cracked rails and about 75 per cent of the service-fissured rails sent to the investigation showed evidence of shatter cracks outside the main fissure."

From the above mentioned report it also appears that the University of Illinois made comparative tests of hot-bed cooled and controlled-cooled rails from four different mills and that while some of the hot-bed cooled rails had shatter cracks and developed internal fissures when subjected to rolling load tests, none of the controlled cooled rails had shatter cracks or manifested internal fissures when subjected to such tests.

Not all the rails cooled in the usual way on the hot-bed contain shatter cracks. It is known that only a very small percentage of the rails rolled contain shatter cracks, and even in those rails the number of shatter cracks is small. But their occurrence is insidious. Shatter cracks are sometimes found in rails produced from a particular ingot of a heat and absent from other ingots of the same heat. A limited portion of a rail is sometimes found to contain a few shatter cracks while the remainder of the rail is entirely free from them. Obviously there can be no real assurance of freedom from shatter cracks unless all rails are subjected to the controlled cooling operation.

* An abstract of the first published report on this investigation was published in the *Railway Age* of August 31, 1935, page 273.

This article, released by the Bethlehem Steel Company, describes recent developments in the manufacture of rail, including the process of controlled cooling to prevent the formation of shatter cracks, to which internal fissures are now generally ascribed. Attention is directed also to heat treatment, and to mitred rail ends as means of overcoming rail-end batter.

Without vaccination the majority of human beings might not have small pox, yet universal vaccination is the only sound prophylaxis.

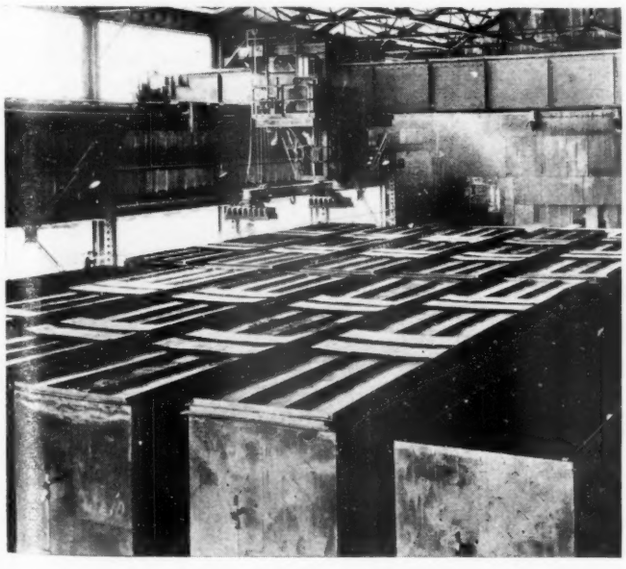
Details of Controlled Cooling Process

More than five years of experimentation was necessary to determine just the conditions requisite for controlled cooling of American rails, and to develop the process on a commercially effective scale. As applied at the mills of the Bethlehem Steel Company, for example, the practice in its broader aspects may be outlined as follows:

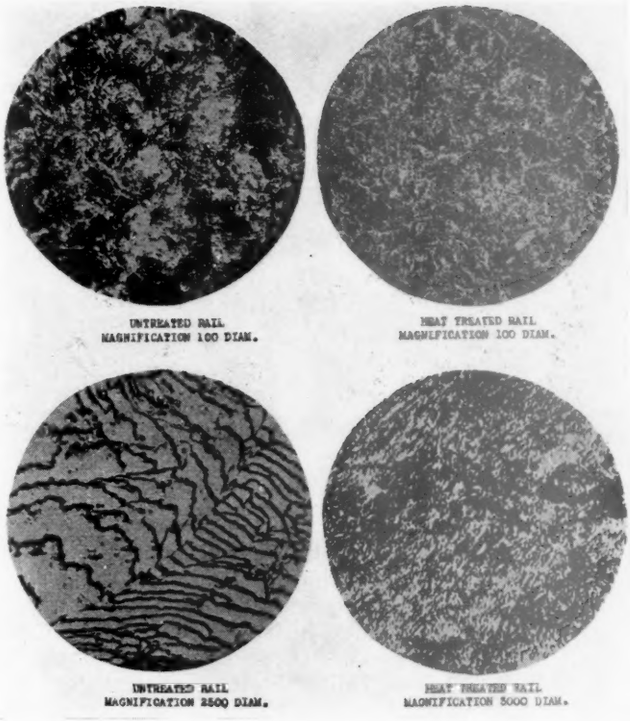
The rails are cooled on the hot bed in the usual manner until the temperature has dropped as low as 1000 deg. F. but not less than 932 deg. F. They are then placed in boxes or tanks for slow cooling, a sufficient number of rails being placed in each box to insure a slow and gradual drop in temperature. After being loaded, the boxes are carefully covered, and the joints are made sufficiently tight to avoid cool currents of air coming into contact with the rails. Moreover the boxes are protected from exposure to snow and rain. The rails remain in the boxes or tanks until their temperature has dropped below 400 deg. F.

Practical experience, as well as extensive laboratory experimentation, has indicated the importance of starting the controlled cooling at a sufficiently elevated temperature, but, of course, below the transformation range, and to continue the retarded cooling to a temperature below 400 deg F. There has been some difference of opinion among investigators as to within what ranges of temperature, during cooling, rail steel is most susceptible to the formation of shatter cracks. The Sandbergs, for example, inclined to the belief that the tendency to shatter cracks was greater between 932 and 650 deg. F., while Gerhardt and Mackie held the view that the tendency to shatter cracks was greatest below 650 deg. F. Both the Sandbergs and Gerhardt agreed, however, that in practice it was important to start at a sufficiently elevated temperature to allow a substantial margin of safety. Mackie, in describing an application of his process which was "100 per cent effective in eliminating all traces of shatter cracks," stated that the rails were allowed to cool normally on the hot-bed until visible redness in a dim light had disappeared, and then were placed in the cooling tank as promptly as practicable.

Apart from the prevention of shatter cracks, the controlled cooling substantially reduces the residual stresses in the rails, thereby greatly minimizing the tendency to the development of weaknesses in the rail, other than transverse fissures, during service. The controlled cooled rails show substantially higher results in bend tests than ordinary hot-bed cooled rails. The ductility is better. All these results are obtained without appreciably affecting the hardness of the rail as determined by laboratory tests as well as by measurements of the wear of the rails in track.



Covers Are Placed on the Full Boxes of Rails While They Undergo the Slow Cooling Process



Photomicrographs Showing the Structure of the Steel in Heat-Treated and Untreated Rails

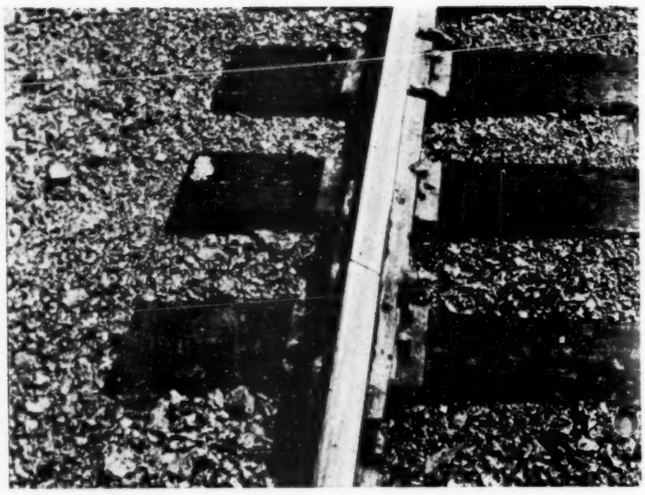
The production of controlled-cooled rails in Europe has reached the figure of approximately 1,000,000 tons and the production of such rails in the United States and Canada now aggregates about 385,000 tons.

In the efforts to meet the increasing need for rails of higher physical characteristics, substantial advances have been made through heat treatment. The term "heat treatment" is here used because of its general acceptance in the industry, instead of the more accurate, but also somewhat more cumbersome, expression "quenching and tempering."

When the demand for rails capable of greater and greater loads first appeared, metallurgists naturally began to consider the feasibility of applying to rails the well known effects of quenching steel in greatly increasing its hardness and strength. Some thirty years ago various methods of heat treating rails began to appear in the technical journals and patents.

It was soon discovered, however, that the problem was not simple. The usual methods of heat-treating steel articles could not be successfully applied to rails. A rail offers certain special obstacles to ordinary quenching operations. Its peculiar cross section with its unequal distribution of metal, its great length, the great mass of metal, particularly in the head, and the high carbon content, all contribute to the difficulty of effective, yet safe, quenching.

For years attempts were made to solve the problem, but with indifferent success. All of the ordinary methods



Close-Up View of Mitred Rail Ends in Service at an Otherwise Ordinary Joint

developed stresses sufficiently great to cause ruptures in the metal, particularly within the interior of the head.

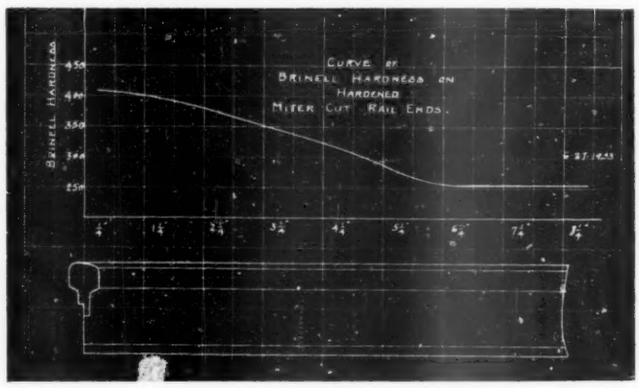
After a period of experimentation lasting some twenty years, Edward F. Kenney, of the Bethlehem Steel Company, discovered a process of preventing these ruptures, which is described in United States Reissue Patent No. 17,240. The practical embodiment of the Kenney process as it has been practiced by the Bethlehem Steel Company involves quenching the rail while cooling from mill heat, discontinuing the quench at a definite temperature, promptly effecting equalization at an elevated temperature, and finally subjecting the rail to controlled cooling.

This treatment is exceedingly important. The present trend is decidedly in the direction of higher speeds in train service. Under the higher speeds on tracks today, the dynamic wheel load sometimes exceeds 100,000 lb. At times, nearly all of the enormous axle load on a pair of wheels is concentrated on a single wheel. The entire braking effect at high speed may be applied on a small area of contact between one wheel and the rail, amounting to only from ⅓ to ½ a square inch. Under these concentrated loads the surface metal of the rail tends to flow. This tendency to flow is opposed by the underlying metal, thereby resulting in great tensile stresses within the interior metal. With the high speeds of today the need for high physical characteristics of rails is great; with the prospective, and probable, higher speeds of the near future, the need will be imperative. Heat treatment of rails effectively meets this need.

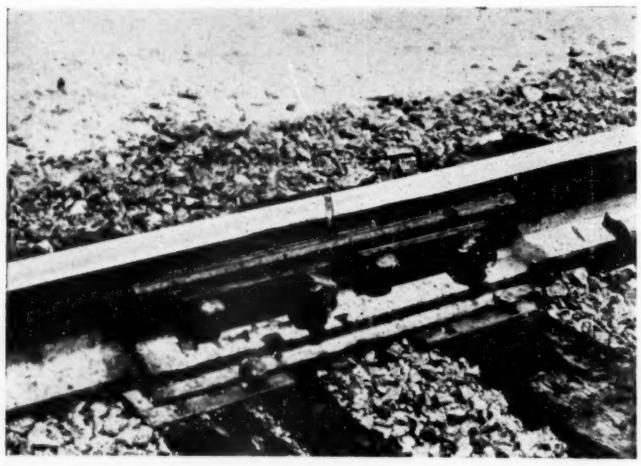
A study of the accompanying table and photomicrographs, giving the comparative physical properties and structure of treated and untreated rails, will plainly indicate why the treated rails are far superior in resisting the stresses induced by high train speeds. Kenney's aim was to produce rails in which the elastic limit was sufficiently high to minimize greatly or entirely prevent the plastic flow of the outer metal of the rail head due to the concentrated wheel loads. The chart indicates the marked increase in elastic limit due to heat treatment. Not only does the greater elastic limit inhibit the tendency to plastic flow of the outer metal of the rail head, but the high elastic limit of the inner metal enables the steel to resist effectively the tendency of the outer metal to flow.

Moreover, the heat treated rail has a far greater life than that of the untreated rail, due to its increased resistance to wear. According to recent reports from five railroads, the average wear in the high rail of curves when heat treated, was only 54.6 per cent that of the untreated rail, and in the low rail, when heat treated, but 55 per cent of the untreated rail.

Messrs. Sandberg of England have developed a special method of heat treating rails involving the application of vaporized water ("Scotch Mist") to the rail head, followed by a controlled cooling. This process is now used by most of the rail making plants in Europe, where, up to March 31 of this year, more than 100,000 tons of rails were produced through the use of this process. While this process has not had general application in this country, its possibilities must not be overlooked.



Curve of Brinell Hardness of Hardened, Mitre-Cut Rail Ends



Close-Up View of Mitred Rail Ends at an Insulated Joint

Rail End Batter and Its Correction

One of the weakest elements of railway track under modern service conditions is the joint. Long before rails are worn out by the abrasive action of the wheels, the joints have usually become loosened by wear on the contact surface between the rails and the joint bars, particularly under the heads of the rails and the tops of the bars. When the wear has become too great, rails have frequently been taken out of track, the ends cut off to remove badly worn parts, new holes drilled, and new joint bars installed on the shorter length rails. This relatively short life of the rail ends and joint bars is due in most part to the impact of the wheels in passing over the joints, especially where the impact has battered the rail ends to form a depression.

Efforts have been made to correct this battered condition by depositing molten steel to fill in these depressions, followed by grinding to an even surface. It is far cheaper and safer to prevent or minimize this battering than to attempt to correct it after it has occurred. The method most commonly used for accomplishing this, is that of

hardening the ends of the rails. Several methods of hardening rail ends are being used at the present time.

Hardening at Rail Ends

In one method of hardening rail ends, the top surface of the head in the region at and adjoining the end of a cold rail is brought to a very high temperature by the application of the electric arc or by torch and then subjected to a quenching action by means of water, oil, or air. The most satisfactory method for the hardening of rail ends, not merely from the standpoint of safety, but also from technical and economical considerations, is to quench the end regions while the rails st tain the mill heat. At the mills of the Bethlehem Steel Company, the end regions are treated as the rails lie cooling on the hot-beds. A multiplicity of water jets is applied to the end regions from a portable quenching head, which also protects the remainder of the rail from accidental contact with the water. The period of application of the spray is controlled automatically by electrical timing apparatus. The large reservoir of heat in a full length rail at a red heat and the plasticity of this red hot metal furnish ample assurance against any part of the rail being subjected to severe cooling strains.

Rails thus end-quenched from the mill heat are either subjected to controlled cooling throughout the length or, where the rails thus treated are not to be controlled cooled, a portable annealing cover is applied to each end when it has cooled to approximately 1,000 deg. F. and this cover is retained in place until the rail end has cooled to below 400 deg. F. The degree of hardness and the depth of penetration within the head metal are easily controlled.

There are very substantial advantages in end hardening rails from the mill heat and control-cooling the entire rail from 932 deg. F. to below 400 deg. F. This mode of treatment produces a rail having all the advantages set forth above for the controlled-cooled rail plus the added advantage of hardened ends.

Mitred-End Rails

The high train speeds of the present and the future must be accompanied by riding comfort for passengers and reasonable costs in the maintenance of rolling stock and track. The greater the speed the smoother the track must be. An important means to this end is the mitred-end rail.

About thirty or forty years ago rails were tried out in track having 45-deg. angle mitre-end faces, the mitred cut extending the full depth of the rails. So far as giving better riding qualities and reducing batter at the joints they were a success. The movement of the rails, however, relative to one another, produced a wedging action which broke joint bolts and caused such a dangerous track condition that the rails were taken out of track and the idea abandoned.

Later the idea was proposed and carried out of providing a mitred cut through the head and a square cut through the base. This combination avoided the danger of wedging, but in preparing them it was necessary to machine the ends of the rails after they had become cold. This was so expensive that no considerable tonnage was ever installed.

A few years ago a method was devised for producing this combination of square end base and mitred head end quickly and accurately while the rail was still at the mill heat. All rails thus produced are absolutely interchangeable. Tonnages of mitred-end rails thus produced, some hardened and some unhardened, have been in service up to three years on some of the most important railroads of the United States. They were purposely installed at points of extremely heavy traffic. The batter of the joints have been reduced from 50 to 75 per cent of that experienced with ordinary square-end rails, and the noise and shock, as the wheels of trains pass over the joints have been decidedly reduced.

In this connection, it may be well to point out that some of the railroads having the heaviest traffic have made long time studies of joint batter. These studies show that of the total batter which occurs in a period of from three to five years, more than half occurs during the first few weeks. The passage of only a few trains is sufficient to batter the corners of the square rail ends and cause a marked blow as the wheel passes over. The mitred joints permit of the load passing gradually from one rail to the next, thus reducing the reversal of shear in the joint bar and protecting the end corners of both rails. Furthermore, a greater degree of hardening is permissable in the mitred-end rails than that which could be given safely to the square-end rails.

One of the accompanying photographs illustrates an installation of mitred joints in the main line of one of the transcontinental railroads. Of particular interest in this picture is the fact that it shows an insulated joint. The mitred joint is of special value under these circumstances. The gradual transmission of the load over the joint is very effective in protecting the insulating fibre.

This article has been confined to certain improvements in rails after they have been given their final form as rolled products. It leaves untouched the manifold advances in steel making and shaping. From the blast furnace to and through the rail mill there has been an increasing application of scientific knowledge for the purpose of controlling and governing the multifarious chemical, metallurgical and thermal factors involved in the manufacture of rails for track service. Metal and slag analyses, mold preparation and use, design and operation of furnaces, temperature control of rolling, and

Comparison of Treated and Untreated Rail 130 Lb. R. E. Rail Section

Heat	Analysis Per cent C.	Mn.	Tensile strength Lbs. per sq. in. Treated	Untreated	Elastic limit Lbs. per sq in. Treated	Untreated	Elongation Per cent Treated	Untreated	Reduction Per cent Treated	Untreated	Brinell Average for head Treated	Untreated	Drop test permanent set 1st blow Inches Treated	Untreated
82K253	.74	.69	173,500	134,000	124,700	79,000	9.5	7.5	14.5	9.5	347	269	.57	.90
86K205	.72	.70	185,000	137,800	131,000	83,300	6.5	10.0	9.5	14.2	368	278	.50	.85
82K255	.71	.68	170,500	135,000	124,500	81,300	7.5	10.5	10.3	14.8	351	274	.57	.93
85K246	.79	.72	184,500	144,300	123,700	86,500	8.2	8.5	11.8	11.0	356	294	.55	.80
84K247	.78	.82	182,000	151,000	126,000	89,000	10.0	8.5	15.0	11.5	363	307	.50	.80
84K249	.72	.72	171,500	137,300	124,700	84,200	9.0	9.5	15.3	13.7	372	290	.51	.83
84K250	.77	.84	172,500	149,500	126,000	86,500	10.5	8.0	20.5	11.5	375	311	.52	.82
85K249	.76	.70	184,800	142,500	131,000	86,200	7.5	9.0	13.8	12.7	375	291	.50	.85
82K279	.71	.63	177,000	133,800	128,500	77,800	7.7	6.5	12.0	9.0	361	277	.66	.90
Average	.74	.72	177,900	140,600	126,700	83,300	8.5	8.7	13.6	12.0	363	298	.54	.86

Izod Impact Tests: Standard 0.4-in. diameter notched bars—treated, 7 foot-pounds; untreated, 2 foot-pounds.

chemical and metallographic checks, all have contributed to the steady advance of rail manufacture. All of this care in preparing good steel and rolling it into a rail should not be vitiated by neglect in the subsequent treatment, thereby lessening its value as a safe and serviceable product for the use of our railroads. Nevertheless it still remains axiomatic that a good rail can be made only from good steel.

E. H. Harriman Memorial Medal Awards for 1935

THE Union Pacific, the Duluth, Missabe & Northern, and the Pittsburg, Shawmut & Northern have been awarded the E. H. Harriman Memorial medals for their 1935 safety records. The New York Central was also honored with a "Certificate of Special Commendation" in recognition of the fact that five units of its system have operated for 12 consecutive years without a single passenger fatality.

The presentations were made on June 10 at the Hotel Commodore, New York, at a luncheon given by Arthur Williams, president of the American Museum of Safety. Citations were read by Lew R. Palmer, of the Equitable Life Assurance Society, who is secretary of the committee of award.

The Union Pacific won the gold medal for railroads in Group A, which comprises Class I roads operating 10 million or more locomotive miles per year; the Duluth, Missabe & Northern was the winner of the silver medal in Group B, comprising Class I roads operating between one million and 10 million locomotive miles; the Pittsburg, Shawmut & Northern, the third winner, received the bronze medal awarded in Group C —Class I roads operating less than one million locomotive miles a year.

In opening the presentation ceremonies, Mr. Williams paid tribute to the late E. H. Harriman and Mrs. Harriman and called upon E. Roland Harriman to present the gold medal to his brother—W. Averell Harriman, chairman of the board of the Union Pacific. The latter, accepting on behalf of the railroad, pointed out how success in safety work is the result of constant effort and discipline. It is only because of the co-operation of the railroad industry as a whole, he added, that the Union Pacific, which, like all roads, uses the equipment of others, has been able to achieve the results cited. Mr. Harriman then turned the medal over to S. H. Osborne, assistant to executive vice-president, Union Pacific. The citation to the Union Pacific reads, in part, as follows:

> Since the revival of these medal awards in 1924 following the World War period, the Union Pacific has been in the lead nine times during these twelve years. It is impossible to estimate the number of lives saved and injuries prevented, directly or indirectly, by this pioneer pacemaker in our railroad safety competitions.
>
> Almost seven decades ago the founders of the Union Pacific drove the golden spike that commemorated the completion of our first trans-continental railroad; the beginning of a great era of human progress. Today the Union Pacific is again blazing a new trail in rail transportation; is writing a new page in the history of railroading through the inauguration of a super-passenger service—"the first comprehensive fleet of high-speed streamlined trains in the world."

The Class B award was accepted from Mr. Williams by W. A. Irvin, president of the United States Steel Corporation, parent corporation of the Duluth, Missabe & Northern. After brief remarks on industrial safety work and the necessity for executive interest therein, Mr. Irvin presented the medal to C. E. Carlson, president of the D. M. & N. The latter, in turn, passed along credit for his railroad's showing to A. V. Rohweder, superintendent of safety and welfare, who also spoke briefly. This citation read, in part, as follows:

> This is the seventh time that the "Missabe" has featured in the Harriman awards—a record that does credit not only to this progressive railroad, but also to the parent organization, the United States Steel Corporation, of which it is a worthy subsidiary.

P. B. McBride, assistant to receiver, Pittsburg, Shawmut & Northern, accepted the Class C medal on behalf of that road, and after a brief expression of appreciation, he turned it over to his associate, J. D. Beaver, general superintendent of the P. S. & N. The citation read in part as follows:

Union Pacific Officers Accept the Gold Medal Won by That Road

Left to right: F. W. Charske, chairman of executive committee; S. H. Osborne, assistant to executive vice-president; W. Averell Harriman, chairman of board; Arthur Williams, president, American Museum of Safety; E. Roland Harriman

> The Pittsburg, Shawmut and Northern Railroad Company—a brand-new winner in our Harriman competition. This railroad presents a one-hundred-per-cent clear record for the year 1935—0 killed, 0 injured—and tops the forty-four Class I railroads competing for the Bronze Medal Award to Group C roads.
>
> The Pittsburg, Shawmut and Northern has had a clear employee fatality record for three consecutive years, and, furthermore, was the only Class I railroad to submit a clear fatality record for the decade ending with the year 1930.

The certificate awarded to the New York Central was presented to President F. E. Williamson, who was "proud and delighted" to accept "on behalf of the men." The certificate read in part:

> Five units of the New York Central System, Line East, Line West, Michigan Central, Pittsburgh & Lake Erie, and the Boston & Albany, all operated twelve consecutive years without a single passenger fatality in train accidents.
>
> During this period these roads accumulated a total of 38,192,972,901 passenger miles. According to the Interstate Commerce Commission, this is the all-time train accident record for Class I railroads as of December 31, 1935. In order to visualize what this remarkable record really represents it might be explained that 38,192,972,901 passenger miles is equivalent to 87,198 years of travel at the rate of fifty miles per hour.

Among the guests who were introduced and made brief remarks were: Dr. John H. Finley, associate editor of the New York Times; Dr. C. H. Watson, president of the National Safety Council; Colonel Harold Fowler, first deputy police commissioner, New York City; and J. M. Davis, president of the Delaware, Lackawanna & Western.

Passenger-Train Length, Speed and Horsepower

A study of what increased speed costs in sacrifice of revenue space

By P. A. McGee

WITH a substantial reduction in normal main-line passenger rates and a tendency to offer more luxurious accommodation in reclining-seat coaches where the seat centers have been increased over the old day coaches a considerable increase in the required number of car-miles may be expected with normal main-line trains.

Much of this additional car movement may be supplied by extra train-miles but as economical mass transportation requires the largest possible train units consistent with schedules which attract traffic, it is necessary to consider the maximum train sizes possible with existing or contemplated new motive power.

During the past few years when the average size of passenger trains was a minimum the schedule speed has in many instances been increased with existing motive power. The limited amount of new passenger motive power purchased in this period is primarily identified with high speed whether the trains consist of light-weight articulated coaches such as the Diesel-electric trains of the Burlington or medium-size light-weight steam trains such as operated on the B. & O. and C. M. St. P. & P., or the conventional very large electrically operated trains of the P. R. R. With this increase in speed, air conditioning which adds approximately 10 per cent to the work performed by the motive power or boiler in summer months, has been installed or is contemplated in all main line trains.

These two conditions, namely (1) The effect of train size on required motive power with a given schedule speed and (2) the effect of speed on required motive power with a given train size, were, with other factors, considered in detail in a paper on "High-Speed Main-Line and Suburban Trains" presented at the New York Railroad Club on October 19, 1934, by G. I. Wright and the writer.* The conclusions drawn in that paper have been amply confirmed by the operating results obtained with high-speed trains placed in service since the paper was presented. It may, therefore, be of interest very briefly to consider the two conditions just outlined in the light of certain basic curves presented in that paper and high-speed train developments in this country during the last year.

* For an abstract of this paper see the *Railway Age* for October 27, 1934, page 499.

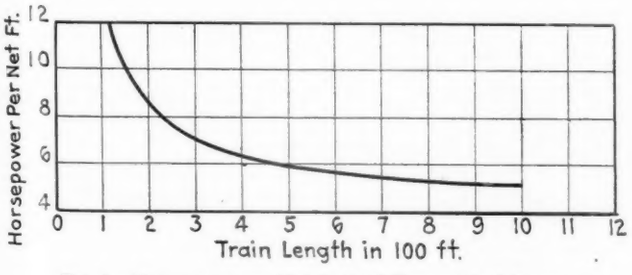


Fig. 1—Horsepower per Net Foot of Conventional Steam Train Length at 100 M.P.H.

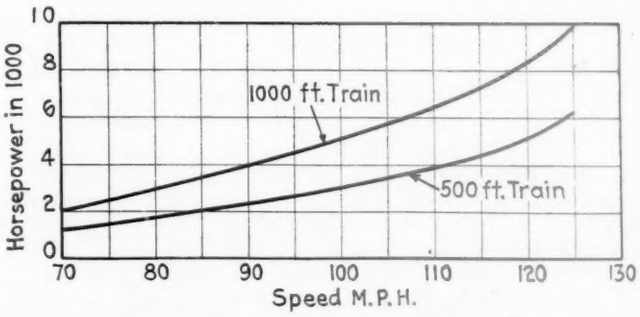


Fig. 2—Horsepower Required by Conventional Steam Trains at Various Free Running Speeds

The simplest single index of the potential performance of a train is its free running speed, which is generally considered on level track or on a rising equivalent grade. This is the index employed in the following curves, although it is recognized that where numerous speed restrictions and stops are encountered the ability of a train to accelerate rapidly to high speed may be of more importance.

Fig. 1 taken from the paper referred to shows the horsepower requirements per foot length of conventional steam-operated trains of varying length and operating at a free running speed of 100 m.p.h. It will be noted that there is a rapid decrease in required horsepower per foot as the length increases from 100 ft. to 500 ft. Above this length the decrease is more gradual. Due to this fortunate condition it is possible to increase the length of passenger trains with only a relatively small increase in power capacity for any given free running speed.

Fig. 2 shows the effect of speed on the required motive power of conventional steam-operated trains of 500-ft. and 1,000-ft. lengths, being respectively 6- to 7-car and 12- to 13-car trains. These curves show a rapid increase in required horsepower at the rims of the driving wheels with increase in speed.

It is at once evident that, if increased schedule speeds are to be obtained by increasing the free-runing speed of trains, a very large increase in the motive power capacity per unit of train length will be required.

These conditions are clearly demonstrated by the high-speed passenger trains placed in service during the past year or so in this country.

The table gives certain published operating particulars together with estimated power developments of a few high-speed steam, Diesel-electric and electric trains which are operating with a very creditable record today. The schedules taken are daily performances and do not represent special or stunt runs. Five steam, two Diesel-electric and one electric run are included. The estimated horsepower of the steam locomotives is calculated

from the normal boiler evaporating rate and the degree of superheating obtained. With forced firing these ratings could be increased. The free-running speed on level track is calculated on the basis that the rated horsepower is available at this speed, although this is not necessarily so in all cases.

The tractive resistance values employed in estimating the free running speeds are taken from the charts presented in the paper previously referred to with allowance for streamlining with trains No. 6 and No. 7 and semi-streamlining with trains No. 2 and No. 3. No allowance for the power required with air conditioning or steam heating is made in these calculations.

The effect of train size on the free running speed and schedule of trains with a given locomotive is well shown by train No. 2. An additional coach has been added to this train since its initiation with an increase of 14 per cent in its revenue-carrying capacity, yet this increased length has only reduced its free-running speed from 89 m.p.h. to 86 m.p.h.

The very marked effect of an increase in free running speed is equally well shown by comparing the performance of the conventional steam-operated trains No. 4 and No. 5. If train No. 4, which is 54 per cent longer than train No. 5, was operated with the 2,000-hp. locomotive employed on train No. 5, its free-running speed would be 77 m.p.h. The difference then between the actual speed of train No. 5, which is 87.5 m.p.h. and 77 m.p.h., is obtained by a sacrifice of 54 per cent in revenue capacity.

An interesting comparison of the effect of train weight may be obtained by considering trains No. 1 and No. 2. With the same capacity motive power the free running speeds of these trains would be practically the same, although train No. 2 is 33.7 per cent longer than train No. 1. The semi-light-weight equipment of train No. 2, thus increases its revenue capacity by 33.7 per cent without increasing motive power or crew operating costs.

The two light-weight streamline trains No. 6 and No. 7 with Diesel-electric power are typical of their class. They are small size trains and, as shown on Fig. 1, for high speed they require a relatively large motive power capacity per foot of revenue length. This requirement, however, has been reduced to a minimum on these trains by the employment of very light construction and where high-speed operation is required with small-size trains it would appear absolutely necessary to employ such construction as otherwise the required power could not be justified by their limited revenue capacity.

The electrically operated train No. 8 is a good example of a large train well adapted to high-speed mass transportation. A comparison with train No. 4 which it replaced, together with an estimate of the steam locomotive which would be required to perform its schedule, is of interest. Train No. 8 has a 70.0 per cent greater revenue capacity than train No. 4 with over 13 per cent increase in potential free running speed and 15.5 per cent improvement in schedule speed. If train No. 8 were operated with steam motive power having a free running speed of 93 m.p.h., this locomotive would weigh approximately 550 tons and develop 5,500 hp. at the driving wheels against the electric locomotive weight of 230 tons and continuous rating of 4,600 hp. If the schedule of train No. 8 is dictated by the accelerating ability of the electric locomotive, which can develop up to 7,000 hp. for short periods, the steam locomotive would require a considerably higher rating than 5,500 hp. with a corresponding increase in weight.

Many interesting features of high-speed trains may be noted in the table. It is generally recognized that a considerable saving in motive-power capacity may be obtained by a reduction in the weight of passenger coaches and much has been claimed for extreme refinements in streamlining. Little attention has been paid to the weight of the motive power required to transport the train. At low speeds with small power requirements per unit of train length or per ton of train, the weight of the motive power may be of small importance. At the speeds obtained with the trains shown in the table, however, the weight of the motive power and its tender and trucks with both steam and Diesel-electric power varies between 32.1 per cent and 38.3 per cent of the total train weight. With the electric train the motive power is only 14.9 per cent of the train weight.

The estimated free running speeds shown in the table may for various reasons never be obtained on the particular runs considered and no allowance has been made for the effect of axle devices to develop power for train lighting or air conditioning. It is, of course, also possible that on down grades, or with forced firing on steam locomotives, speeds in excess of the free running speeds shown may be obtained.

From the curves considered and the operating results shown in the table, it may be concluded that for any given train increased revenue capacity may be economically obtained by increasing the size of trains at a given schedule speed, but that an improvement in schedule speeds requires a large increase in the power capacity or drastic reduction in revenue capacity.

High Speed Main Line Trains—Characteristics and Published Performance of Typical Steam, Diesel-Electric and Electric Trains

Train No.	Road	Equipment	Run	Loco. class	Coaches: Approximate length, ft.	Coaches: Approximate weight, tons	Total train: Approximate length, ft.	Total train: Approximate weight, tons	Total train: Ratio loco. weight to train weight	Estimated: Hp. at driving wheels	Estimated: Free running speed, m.p.h.	Estimated: Hp., per T	Published schedule: Distance, miles	Published schedule: Time, min.	Published schedule: No. intermediate stops	Published schedule: Scheduled speed, m.p.h.
Steam-Operated Trains																
1	C.N.W.	Conventional	Chicago to Minneapolis	4-6-2	483	475	573	771	38.3	2,200	89.0	2.85	419.2	420	5	59.9
2	C. M. St. P. & P.	Semi-lt. wt.	Chicago to Minneapolis	4-4-2	645	459	736	732	37.3	2,100	86.0	2.87	420.8	420	7	60.3
3	B. & O.	Semi-lt. wt.	Jersey City to Washington	4-6-2	490	350	590	596	38.1	2,000	90.5	3.35	223.6	240	6	55.9
4	Pennsylvania	Conventional	New York to Washington	4-6-2	775	750*	890	1,105	32.1	2,350	82.0	2.13	226.5	255	4	53.4
5	Reading	Conventional	Jersey City to Philadelphia	4-6-2	504	468	561	697	32.8	2,000	87.5	2.88	90.2	103	5	52.5
Diesel-Electric Trains																
6	C. B. & Q.	Lt. wt.	Chicago to Minneapolis	B-4	177	74	197	110	32.7	495	88.0	4.5	441.0	420	7	63.1
7	N. Y. N. H. & H.	Lt. wt.	Boston to Providence	B-B	160	86†	207	136	36.8	600	91.5	4.40	43.8	44	1	59.7
Electric Trains																
8	Pennsylvania	Conventional	New York to Washington	4-C+C-4	1,320	1,315	1,400	1,545	14.9	4,600	93.	2.97	226.5	220	4	61.7

* Steam schedule 1934 and early 1935.
† Weight includes normal passenger load.

"Cost Finding" Plan Proposed

Report to Eastman commended to railroads and I.C.C. for their consideration—To be used for rate-making

WASHINGTON, D. C.

A PROPOSED plan for a standard procedure for determining average over-all costs of railroad freight services in units corresponding to the rates charged for such services, for use in connection with rate-making and rate regulation, based on data to be furnished by the railroads in supplements to their annual reports and to be determined periodically by continuous routine, is recommended in a report made by John H. Williams to Joseph B. Eastman, federal co-ordinator of transportation. The report, made public by Mr. Eastman on June 5 with an introductory statement commending it to the careful consideration of the railroad executives and the Interstate Commerce Commission, is entitled "Cost-Finding in Railway Freight Service for Regulatory Purposes," and was prepared in compliance with the direction to the co-ordinator in section 13 of the emergency railroad transportation act of 1933 to "investigate and consider" among other things "cost finding in rail transportation."

Mr. Eastman said that "in my judgment it points the way to the introduction of a practical system of standard and routine cost-finding for use in connection with rate-making," and that, while he did not undertake to vouch finally and irrevocably for all the details of the plan, he was fully persuaded that it proceeds in general along sound lines and warrants without question the practical test which its authors propose as a first step towards the introduction of the new system. It is recommended that it first be made effective and perfected on a limited number of railroads selected as representative and that the commission create a small organization unit to supervise and direct the working of the proposed plan.

Mr. Eastman pointed out that as federal co-ordinator of transportation he was without power to compel the introduction of the new system and that the trial or adoption of the plan rests with the railroads and the commission. He submitted it "with confidence that it is worthy of the most careful consideration and that such consideration will lead to the adoption, in whole or in part, of the recommendations which it contains." He also said that "there is every reason, apparently, to believe that the railroads will object, but that is because they do not yet recognize, as they soon will, the great need for information of this character in connection with present-day competitive conditions in transportation, or the demands for it which will be voiced by those who use the railroads and other transportation agencies."

Railroads Object to Plan

It is also pointed out in the report that the railroads object to the whole idea of determining statistical data for cost finding purposes and their publication as a matter of continuous routine, arguing that nothing can be gained by requiring the proposed cost data to be prepared in advance of an actual need for them. It is stated that they apparently fear that their rates which are found to be relatively high in relation to costs will be reduced but that as a practical matter it will be exceedingly difficult to raise the rates which are found to be relatively low.

There is no argument in the report as to the extent to which rates should be governed by the cost factor and full recognition is shown of the impossibility of determining precise costs, but it contends that while there are other factors than costs that must be taken into consideration in rate-making, it is impossible to do justice both to the railroads and the shippers without a standard cost-finding procedure.

Cost Finding for Regulatory Purposes

Cost finding for regulatory purposes is described as quite different from cost finding for managerial purposes. For regulatory purposes the costs are in units comparable with freight rates, whereas for managerial purposes they are in units representing the way expenses are incurred. The plan has been devised so as not to require any material change in the classification of accounts or the accounting procedure of the railroads. The procedure proposed is entirely statistical and therefore it is stated that its installation will be simple and will not cause confusion. The cost of applying such a plan as that recommended is estimated at less than $2,000,000 for the first year for all Class I railroads and as decreasing to less than $500,000 a year after a few years.

The costs to be arrived at are without regard for expediency in the matter of competitive conditions and what the traffic will bear, as the purpose is for comparison with rates so that the extent to which expediency has entered into the rates may be known. Only the first stages of the process would be required of the railroads. After the determining of cost data as part of the regular routine the work of converting the data into costs in units comparable with freight rates would be done only as needed. Where costs were desired by the commission, this work would be done by the Bureau of Statistics and several stages of adjustments are proposed.

"The scope of the averages to be used, the items to be modified and the extent to which expediency may be permitted to enter into the rate constitute the essence of rate-making," the report says, "and would be decided by the commission."

The report proper consists of 108 pages and there is an appendix consisting of some 50 double-size pages containing a series of schedules showing how the plan is to be applied. This is the eighth edition of the report, the preceding seven having been issued at different stages of the development of the proposed plan to stimulate criticism and suggestions, but Mr. Williams says "the last word cannot be written without a practical test."

Mr. Eastman's Comments

"Manifestly, such cost finding is beset by great and unusual difficulties," Mr. Eastman said. "In railroad service there is no uniformity, such as is often found in the products of manufacturing industries. On the contrary it is performed under a myriad of differing conditions. To a certain extent, the labor and materials which go into operating expense can be directly assigned to different classes of service, as to freight service or to passenger service; but much expense is incurred in common for all services, and there is little or no expense

which can be directly assigned to a specific service, such as the haul of a particular carload of coal.

"Because of these great difficulties in the ascertainment of specific service costs, the tendency in rail transportation has been to dismiss the task as impossible, and to deal with the cost problem only in a very broad and general way. Such attempts as have been made from time to time to ascertain specific costs have taken the form of special studies rather than any continuous and regular routine.

"In recent years, however, new interest in railroad cost finding has developed and grown rapidly. One reason for this has been the extent to which other large industries have found it both practicable and beneficial to adopt continuous routine systems of cost finding, not only for control of expenditures but also for product pricing. Another and more important reason has been the great development of competition from other forms of transportation, making it essential for the public regulatory authorities as well as the various transportation agencies to have as definite knowledge as possible of service costs in order, particularly, to prevent rate cutting from being carried beyond sound economic limits.

In connection with a proposed general revision of accounting rules for steam railroads, the subject was brought forcibly to the attention of the Interstate Commerce Commission by the National Industrial Traffic League, an organization of the traffic representatives of shippers, some years ago, and was considered at public hearings. Soon after the proposed report was issued, economic depression fell upon the country, and it became necessary for the railroads to curtail expenses in every possible way. The time did not seem propitious for the introduction of an elaborate new system of routine cost finding, such as had been proposed by the National Industrial Traffic League, and consideration of the subject was, therefore, postponed, until it was revived by the directions given to the co-ordinator in section 13 of the emergency act.

"Mr. Williams was instructed by the co-ordinator to give particular attention to the desirability of arriving, if possible, at a system of continuous routine cost finding which would not impose a heavy new burden of accounting or statistical expense upon the railroads. He was not expected to produce a system for the accurate ascertainment of precise costs. It was realized that no such system is possible, and that the utmost that can be expected is a reasonable approximation of costs, based upon normal average conditions, which will be of particular value in determining relations between the costs of specific services and introducing the degree of order, consistency, and uniformity in the consideration of such costs by the railroads and by the commission which it is impossible to obtain from sporadic and special studies.

"Mr. Williams' report, which is herewith submitted and which he has prepared with the assistance and collaboration which I have already mentioned, speaks for itself. It is not presented as a perfect system, but as one which is based on the extensive experience with this general subject which has been gained in the course of the many years in which the Interstate Commerce Commission has been regulating railroad rates and analyzing railroad statistics, and which contains within itself the means of making perfecting amendments as further experience is gained in the actual operation of the system."

Following are excerpts from the report:

Outline of Proposed Plan

The proposed plan is based on the idea that while there are other factors than cost that must be taken into consideration in regulating freight rates, it is impossible to regulate them with due regard for the interests of *both* the railways and the public without knowledge as to the *relative* cost of performing the different services rendered. Also that as competition between different forms of transportation (rail, truck, water, etc.) grows, cost will become an increasingly important factor in rate-making. The proposed plan provides a standard cost structure and cost finding procedure through which such relative cost can be determined. While it is devised to meet the conditions of rail transportation, in principle it is adaptable to all forms of transportation.

These costs must necessarily represent averages. The exact cost in connection with every rate is different for every system, for every section of the same system, for every year, and for every day of the year. This raises the question of the practicability of using exact costs as a factor in rate making even if they were attainable. If costs are to be generally applicable over a period of years, and to all roads in a position to compete for the traffic—the same as freight rates are—they must represent averages.

The plan as here presented provides a means of determining costs, in units comparable with freight rates, for each Class I railway, and each accounting division of such railways as are subdivided by accounting divisions, *grouped as occasion may require*. The plan is broad enough to cover the requirements of all of the railways. Like features would therefore be handled alike, and would be comparable between railways.

Plan Includes Five Steps

The proposed plan is embraced in five steps:

First, the furnishing of certain cost data by the carriers as a part of their regular routine. These data would be furnished in the form of a supplement to their annual reports to the I.C.C. and would be subdivided according to accounting divisions, if any. In other words, there would be a separate set of data for each railway, or for each accounting division where the railway is so divided. This would constitute the only requirement made of the carriers.

Second, the selection of the carriers, the accounting divisions of such carriers, and the period upon which the costs are to be based. These would be selected to be representative of the geographical, traffic, and other conditions to which the rate in question is to apply.

Third, the computing of a base cost in units of a car lot for the rate in question, from the selected supplementary reports. This base cost would reflect only the outstanding differences between rates: bulk of the commodity with relation to its weight, length of haul, type of car used, etc.

Fourth, the modifying of the base cost so determined, with respect to such special conditions as may be peculiar to the rate in question and not taken into consideration in the base cost, in much the same way as the base rates in the fire insurance business are modified to meet special conditions attached to a particular rate.

Fifth, the base cost, having been modified to meet the special conditions of the rate in question, is then adjusted to equalize maintenance as between years and to include and equalize return on investment, as described in the Section "Adjustment of Modified Base Costs, for Equalization of Maintenance and Return on Investment." It is then converted into cost comparable with freight rates by dividing the modified and adjusted cost per car by the number of hundredweight or tons in the net load.

The last four steps would be taken by the parties desiring the costs. Where the costs were desired by the Commission, they would be computed by the Board of Statistics.

The idea back of the plan is for the commission to make the proposed supplementary report mandatory and, without restricting other ways in which costs may be computed, require that when costs are introduced as evidence in rate cases there shall be a computation in accordance with the proposed plan. Also, that while the proposed plan should be rigidly adhered to in such computations, the commission would consider any objections made to any feature of it, and modify the plan from time to time as occasion might require. If this idea is carried out, such imperfections as exist in the plan at the outset, will, by the process of trial and error, gradually be eliminated.

From a purely cost-finding standpoint, certain changes, both

in the classification of accounts and in the accounting procedure, would be desirable. But since costs can be determined with sufficient exactness for regulatory purposes without requiring material changes in things as they are, it is thought best that no changes other than those here recommended be made until the proposed plan has been tried out.

The only reason for knowing costs in rate making is to furnish information as to the relative approximate profitableness of different rates (that is, the extent of the difference between the cost and the rate due to competitive conditions, what the traffic will bear, etc.), and a level below which costs should not go excepting for reasons of expediency.

To render this service it is necessary that the costs for all railways be based on the same distribution factors and policies with relation to the use of averages, and be constructed in conformity with the purposes for which expense is occasioned and the way it can be most equitably divided into units comparable with freight rates; regardless of how rates are constructed or the extent to which expediency enters into their making.

Over-All vs Unit Costs

Many of the arguments advanced against the practicability of determining costs in units comparable with freight rates may be traced to a failure to realize the *basic differences* between "Unit" and "Over-All" costs, as these terms are here used.

Unit Costs (sometimes called budgetary or statistical costs) represent expense immediately associated with and easily identified as applicable to a given item of expense, function, or service, that is less than the ultimate product or service in connection with which the expense is occasioned.

Over-All Costs, on the other hand, represent the *total* expense of producing a product or performing a service. For example, costs in the units in which sales are made: costs in units comparable with freight rates; or cost in units of services: terminal services, line services, etc., including a full share of administrative, sales, and other overhead expense. Over-all costs are used for comparison with sales prices and for price fixing, for determining the lines along which a business can most profitably be expanded or contracted, and for policy determination. They are the subject of this report.

These two types of costs are found in every industry, and the different uses they serve are ordinarily well understood and appreciated, yet in railroading the need for exactness, which is imperative in unit costs, is constantly urged as an argument against the practicability of determining over-all costs in units comparable with freight rates.

For example, it is sometimes urged that it is impossible to obtain exact costs in units comparable with freight rates just as though this were an argument against the usefulness of anything *but* exact costs, whereas, obviously, *average* costs are the *only* costs that properly should be used for price fixing. Much of the existing confusion concerning rail cost finding grows out of speaking of, and trying to use "unit" and "over-all" costs as alternatives.

As illustrative of this, it is not unusual to hear cost finding in rail transportation advocated on the ground that it is needed for economy and expense control purposes. The fact is the railroads already have reasonably adequate *unit* costs, which, as above suggested, are the only costs that are of much value for these purposes. What the railways do not have, and need, is over-all costs in units comparable with freight rates *for* price fixing. Rates apply over different routes and for an indefinite period of time, and, therefore, to make costs in units comparable with freight rates anything other than an average of the alternatives *permitted in the rate* would be absurd. Unit costs are no more suitable for price fixing than over-all costs are for expense control.

Advantages of Continuous Routine

Under the proposed plan, a base cost would be determined from cost data prepared by the railways as a matter of continuous routine, and then, if necessary, modified by special study to meet the conditions peculiar to different freight rates. This would insure that no expense would be duplicated or omitted in arriving at the base cost, and limit the use of special studies to the defining and evaluating of the modifications of the base cost to meet special features of different freight rates.

The railways object to the whole idea of determining statistical data for cost finding purposes and their *publication* in a supplement to the annual reports as a matter of *continuous* routine. They claim that in practice there would be relatively few occasions when it would be necessary or desirable to use costs in units comparable with freight rates, and that all of the advantages under the proposed plan could be obtained by adopting a standard cost finding procedure and requiring the preparation and filing of supplementary reports only as and when needed.

Under such a plan it would be necessary, as at present, to know some time in advance of their use what costs would be required. Shippers' representatives desiring the cost in connection with a rate would have to make application to the commission, for the railways to prepare and furnish them the necessary supplementary reports, before they could prepare the desired costs. If during a hearing it should become desirable or essential to determine the costs for additional railways, or years, the hearing would have to be suspended while the additional supplementary reports were being prepared.

One of the advantages of a continuous routine, and having supplementary reports available in advance of a specific need for them, would be the ability to make up costs for different railways, territories, and periods on short notice, without the necessity of planning for it in advance. Under the proposed plan all supplementary reports would be immediately available when needed, and the fact that they were prepared in advance of knowing how the figures were to be used would lend assurance to all concerned of their unbiased character.

None of these arguments seems to carry much weight with the railways. Behind their attitude apparently lies the thought that if the proposed plan is adopted, and data from which costs in units comparable with freight rates can be computed are made available to the public, it will be found that many of their rates are relatively low, whereas many others are relatively high. They apparently fear that those which are found to be relatively high will be reduced, but that as a practical matter, whatever the commission may be willing to allow as a right, it will be exceedingly difficult, if not impracticable, to raise the rates which are found to be relatively low.

However all of this may be, it would seem the commission must know costs in units comparable with freight rates, since cost is a factor in rate regulation; and the railways must know costs in units comparable with freight rates if they are to put their problem with relation to rates forcefully before the commission. Certainly nothing can be gained by refusing to face the issue, whatever it may be.

Determination of Base Costs

In railroading we have most of the problems of the electric service industry complicated by a much greater number of variables. In it, dependable costs cannot be obtained either by computing cost on the basis of direct expense plus a pro rata proportion of indirect and over-head expense as in manufacturing, or by dividing revenue and expense into a limited number of customer classes as in the electric utility industry. Trains vary in length, tonnage, motive power, and character of service; and most of them carry a wide variety of commodities ranging from baby carriages to tomb stones. One shipment may be handled by several roads. The distance, the equipment, and the number of interchanges, yarding and reclassifications are different for almost every shipment.

In order to deal with this unusual number of variables it is necessary, as in the insurance business, first to determine an over-all base cost per car for the rate in question predicated on only a limited number of basic factors, and then to modify it to meet any special requirements of the particular rate.

The proposed plan is based on this idea, and permits of a continuation of the present I.C.C. Classification of Accounts, Accounting Procedure, form of annual report with only minor changes, and the Rules for the Separation of Passenger and Freight expense in effect on January 1, 1936.

It contemplates the division of all expenses of each railway between passenger and freight services, and the freight portion in turn between the accounting divisions of each railway. The above-mentioned base cost is to be determined on the basis of

a given year or period of years and selected accounting divisions of the roads to which the rate in question is to apply.

The "base cost" would be arrived at by, in effect, dividing the freight expense of each road, or accounting division where the road is divided into accounting divisions, between c.l. and l.c.l. freight, and the c.l. portion in turn between box, refrigerator, stock, open top, tank and flat cars; and the l.c.l. portion between box and refrigerator cars, all as described at length in the section "Cost Data to be Furnished by Carriers in the Form of a Supplement to their Annual Report to the I.C.C." These eight divisions of expense (6 c.l. and 2 l.c.l.) are, for practical purposes, comparable with major commodity groups. Each type of car has been developed through the years to serve a group of commodities. The proposed plan assumes that the line haul cost of 50 tons of sand in an open top car would be the same as the cost of handling 50 tons of coal in a similar car.

There would be the four following over-all costs for each of the above "eight divisions of expense":

Terminal Service—Originating and Terminating

Line Service—Way Train

Line Service—Through Train

Line Service—Other than Train (Intermediate Yardings, etc.)

All expense in connection with certain services, listed in the section "Modifying Base Cost to Conform to a Particular Rate," would be excluded from the foregoing figures, and the estimated expense of only such of these as were involved in the rate in question (and not separately paid for) included in arriving at the base cost. Expense in connection with all other services and special conditions would be left in the figures used in computing the base cost and dealt with as described at length in the above-mentioned section.

The figures up to this point would be based on operating expense, taxes, and joint facility and equipment rentals including actual maintenance expense, but no allowance for return on investment. At this point they would be adjusted to reflect average maintenance expense over a period of years and to include return on investment as described in the Section "Adjustment."

After being so adjusted the cost per car would be divided by the number of tons or hundredweight of the load to arrive at the cost in terms of a freight rate.

The commission would have a small organization unit, whose duty it would be to study the proposed plan and the costs produced under it as a going concern. It would be the duty of this organization unit to follow all decisions of the commission with relation to cost finding for rate making, and to make such modifications of the plan as were necessary to give them effect. Also to accumulate, co-ordinate, and catalogue all decisions of the commission bearing on policies to be followed in determining base costs and modifying factors, with a view to making them available for reference purposes. It would be expected to make recommendations to the commission, from time to time, for the simplification and improvement of the plan.

The report contains a description of the schedules that would be contained in the supplementary reports, arranged in the approximate sequence in which they would be prepared. The description is in sufficient detail to show the cost structure. The rules for the separation and distribution of expense are given on each schedule, as reproduced in the Appendix.

The work from this point on relates to the converting of this cost data into costs *in units comparable with* freight rates, and as already stated, would be done only as needed and by the parties so desiring. The work of converting the cost data contained in the supplementary reports into costs in units comparable with particular rates may be done in a variety of ways according to the requirements of each case.

Return on Investment

Then follows a detailed discussion of the methods for converting the cost data into base costs, for modifying the base costs to conform to particular rates, for the adjustment of the modified base costs for equalization of maintenance and return on investment, and of statistical policies in over-all cost finding. There is also a discussion of various criticisms and suggestions so far received as to the details of the proposed plan. Regarding the treatment of return on investment the report says:

Under the plan of accounting now in use actual return paid on investment is represented by rent of leased roads, interest on funded debt, interest on unfunded debt, amortization of discount on funded debt, and dividends on stock. No change would be made so far as the carriers' records are concerned. In determining the final cost, however, the actual figures in connection with the above items would be ignored and 5¾ per cent (or whatever per cent the commission might determine upon) on the nearest available *total* depreciated property value of the railway or railways in question, as determined by the commission's Bureau of Valuation, would be substituted for it. This amount would be divided by the average annual operating expense (including taxes, and equipment and joint facility rentals), for all services, freight, passenger, etc., for the preceding ten years, and the resultant per cent added as a surcharge to the modified freight costs, that is, it would be added to the cost after it had been modified to meet all other requirements.

Continuation of Federal Co-ordinator Office Doubtful

WASHINGTON, D. C.

CONGRESS having taken a recess from June 8 to June 15, leaving only two more days in which it will be in session before the emergency railroad transportation act of 1933 expires by limitation, the prospects for a continuation of the office of federal co-ordinator of transportation seemed extremely doubtful this week. Senator Wheeler's resolution providing for a three-year extension of the act had not been brought before the Senate committee on interstate commerce, although it had had several meetings, and the Senator was understood to be making some efforts toward bringing about a compromise on a plan by which the office of co-ordinator might be continued but without power to issue orders.

Truckers Favor Extension

Continuation of the office has been opposed by the railroads, the railroad labor organizations and the National Industrial Traffic League, but is advocated by the American Trucking Associations, Inc. Ted V. Rodgers, president of the association, called at the White House last week and sent a letter to President Roosevelt urging passage of the Wheeler resolution. A similar resolution was introduced in the House by Representative Russell, of Massachusetts, but no action was taken on it.

Reports have been circulated to the effect that there was some sort of "deal" or understanding between the railroads and the railroad labor organizations before their committees signed the agreement on May 21 providing for a plan of dismissal compensation for employees displaced by co-ordination projects. One version of the report had the President a party to the understanding, although he had stated at press conferences that in his judgment Mr. Eastman's work should be carried to completion.

Unions Have Turned Against Eastman

A year ago the act was extended for a year as a result of efforts of the labor organizations, because they wanted to have the restrictions against reduction in employment continued, over the opposition of the railroads. This year, after having obtained a five-year agreement with the railroads making provision for employees who

might be displaced by co-ordination, the railroad labor organizations have turned against Mr. Eastman because he had indicated an intention of issuing orders requiring terminal unification in a number of cities and they had been led to fear that his plans might cause the displacement of a large number of employees.

Selfish Special Interests Seen as Crux of Problem

In an address on June 8 before the alumni of the Massachusetts Institute of Technology Mr. Eastman spoke of the transportation problem as having become "the battleground of special interests who are apt to drown out the voices of those who undertake to bring the general interest into the range of consideration." No one should or could prevent such special interests from expressing their views," he said, "but at least it can be recognized that there is a general public interest which ought also to be taken into account."

The "delay" of the railroads in inaugurating centralized scientific, engineering and economic research he ascribed to a fear by officers of individual railroads that such joint effort "would affect their personal interests adversely."

The act which created the federal co-ordinator, he said, was intended to accomplish co-ordination of railroads but it contained an obstacle in the provisions which protected the employees of May, 1933, against loss of employment or reduction of compensation. This obstacle has now been removed by the agreement which will give men displaced by co-ordination or consolidation projects 60 per cent of their previous compensation for a considerable period of time or until they can be given equivalent employment.

Rail Employees Protected Even Better Than Civil Servants

"Taken at face value," Mr. Eastman continued, "this agreement was an epoch-making performance and a product of real industrial statesmanship. While dealing justly with the men, it gave the railroads an opportunity to realize a very considerable part of the economies immediately and the remainder gradually, but quite rapidly if business improves. It gave the men protection against temporary hardships which co-ordination might impose, a protection such as the employees of no other industry in this country enjoy, or even the employees of our federal, state, and municipal governments.

"It remains to be seen how the agreement will work out. The official railroad attitude is for co-ordination, in principle. Two years ago the Association of American Railroads was created to promote greater co-operation and collective effort by railroad managements. Yet the association often finds it difficult to do effective work of this character, because of conflicting views and the concentration of the managements on the apparent and immediate interests of the individual roads. Some of the executives of the larger roads frankly favor large-scale consolidations and disfavor co-ordination. Most of them are strongly opposed to any federal statute which would help them to bring co-ordination about.

Labor Committing "Long-Range Suicide"

"The employees regard the agreement as a valuable 'Hindenburg Line,' useful in case of retreat, but seem prepared to fight in the front-line trenches against any displacement of labor, temporary or otherwise. They profess to feel that any economies from co-ordination would not inure to their advantage but only provide more milk for 'Wall Street' to absorb. Apparently they are not greatly concerned by the prospect of what the railroads may be able to do in the way of co-ordination without governmental help, and like the executives they do not look with favor on any federal statute which would supply such help.

"I suggest that the country cannot wisely leave the decision of this matter to the executives and the railroad labor chiefs. Theirs are by no means the only interests at stake, and they may be too close to their own interests to see them in proper perspective. There is no more important thing than the good of labor, but unless I am wholly in error as to the transportation future, that good will not in the end be served by any course of action which stands in the way of the best possible service at the lowest possible rates consistent with fair wages and good working conditions. Any such action is, I fear, long-range suicide, and no one who is a real friend to railroad labor will encourage them in it.

"The railroad managements under present conditions are influenced by such a mixture of motives and emotions that I question whether they can be accepted as safe guides to a sound public policy."

Speaking to an audience of engineers Mr. Eastman said "the highway and air transportation industries seem to be doing a reasonably good job" along the lines of making the best possible use of the many opportunities which the engineering profession holds out, but he was "not so sure of rail or water transportation." "The railroad industry," he continued, "is not getting the benefits which it should get from mass production. Too much of its equipment is custom-made. In many of the materials and supplies which it uses there is far too great a diversity of types and sizes, a diversity which cannot be supported by scientific or engineering reason."

The only way to reach railroad success, he said, is through better service at lower prices, but "mere slashing of rates to meet competition will not do the trick. Many railroad men who were trained in the old school have the idea, I think, that by such slashes they can kill off their competitors, as they drove the boats off the rivers in the old days, while continuing to maintain a high level of rates at non-competitive points and on non-competitive traffic, or even to increase that level. They will find modern competition far too pervasive, in my judgment, for any such treatment. The sound thing to do is not to cut rates regardless of costs, but to bring down the level of costs and bid all along the line for mass volume of traffic, whether or not competitors are after it.

Lower Rates Would Stimulate Freight Traffic, Too

"Some of the railroads are seeking the protection of the Supreme Court, because a tyrannous Interstate Commerce Commission has forced upon them passenger fares at 2 cents a mile. I venture to guess that before they are through they will be glad that there was a tyrant to do this. The American people will respond in the same way to low-cost, convenient, and dependable transportation of property. Any one who doubts that has only to figure the extent to which the cost of transporting raw material, fuel, semi-processed materials, and finished goods enters into the prices which we pay for goods.

"The thing of real importance is that the idea of co-ordination shall survive. In the long run, and whatever may be done for the moment, I have a vast amount of confidence that the idea of co-ordination will prevail in one form or another, and in ways or by means which perhaps we do not now foresee. It will be forced upon transportation by the natural course of events, and the engineers and scientists will be important contributing factors."

Train Service Rules Surveyed

Co-ordinator's labor relations section finds justification for dual system of payment—Beyer recommends further study

WASHINGTON, D. C.

CO-ORDINATOR EASTMAN on June 10 made public the report of his Section of Labor Relations, prepared under the direction of O. S. Beyer, of a survey of the rules governing wage payments in railroad train and engine service, including the dual system of payment by miles or hours. The conclusion is reached that "the impression that labor agreement rules necessarily add to the cost of railroad operation, and that if the rules were eliminated the labor cost of the railroads would be greatly reduced, is erroneous." However, the report suggests that a further inquiry into the effects of the rules should ascertain the extent to which they may lead to duplicate payments for the same time and whether or not these payments are warranted.

In a foreword, Mr. Eastman says: "These rules have often been the subject of controversy and criticism, and there is much misunderstanding of one kind and another in regard to them. It seemed to me desirable to develop the basic facts by an appropriate inquiry. Controversy and misunderstanding are not conducive to good 'railroad labor conditions and relations,' and the public ought to know what the facts are. The facts presented in the accompanying report have been checked with both the managements and the men, and are believed to be accurate."

No attempt was made, the report says, to judge the soundness or unsoundness of the rules. The specific aim of the inquiry has been to interpret the rules in terms of their direct financial results, since cost has been one of the fundamental grounds of criticism. On this point it is stated that the difference, amounting in the last few years to more than $5,000,000 a month or $60,000,000 a year, between the total of payments for "straight-time hours worked" and "straight-time hours paid for," does not mean money paid for "time not worked," but payments for certain hours "when employees are relieved from duty" and payments made for "excess mileage run during straight-time hours."

Criticisms that have been made of payments for excess mileage within the limits of a standard day's work are declared unwarranted on the ground that they tend to reduce overtime and that the mileage system provides an incentive for "employees' co-operation in the introduction of heavier or faster motive power and speedier train operation."

The report includes 50 pages and there is a statistical appendix of 106 pages. Following is the text of Mr. Beyer's memorandum to Mr. Eastman and an abstract of the summary and conclusions of the report:

Mr. Beyer's Comments

The accompanying study of certain labor rules deals chiefly with the effect of these rules in determining the compensation paid to the train- and engine-service employees of the railroads during the month of March, 1934, which was chosen as a sample month for this purpose. The willingness of the railroads to furnish the necessary basic data made it possible to undertake this investigation, and their co-operation has been greatly appreciated.

In its investigation of means of improving railroad labor conditions and relations, the Section of Labor Relations has interpreted its essential function in terms of fact-finding. Thus, the data contained in the report indicate the relative importance of the various rules for wage payment in the train and engine service and disclose much information regarding their characteristics. The facts developed are essential to a comprehensive appraisal of the rules, even though they do not in themselves provide a final appraisal. In the instances in which the application of the rules is subject to a degree of managerial supervision, a study of this report may have further value in marking out areas within which such control can be exercised with profit both to the railroads and to their employees.

The report is not by any means or in any sense a mandate to change the rules. Where facts may indicate the desirability of some modification from the viewpoint of either railroad efficiency, employee welfare, or public service, such changes may be brought about only in keeping with the provisions of the Railway Labor Act. Section 10(a) of the Emergency Railroad Transportation Act provides that nothing in that act shall be construed to repeal, amend, suspend, or modify any of the duties and obligations imposed upon the railroads and their employees by the Railway Labor Act or by contracts entered into in accordance with the provisions thereof.

A further inquiry into the effects of the train- and engine-service labor rules should, first, ascertain the extent to which they may lead to duplicate payments for the same time and whether or not these payments are warranted. Secondly, it should seek to determine the advantages and disadvantages of various rules which are not directly reflected in the amounts of compensation paid, but which may be revealed by a study of the application of the rules in particular instances. Thirdly, it would be desirable to include in such an inquiry a study of the effect on railroad operating practices and labor relations of attempts by operating officials to avoid making wage payments under certain of the rules. It is conceivable that the effect on railroad service and morale of avoiding the payments sometimes may be as important as the payments themselves. On the other hand, it is obvious that many rules save money for the railroads, for if those rules did not prevail, the managements would be forced to incur greater expense in accomplishing the same results by other devices. A study of the historical background of certain of the rules could also be made with advantage.

This report is based on the research work of E. T. Paxton, research assistant in the Section of Labor Relations, while Dr. E. M. Fitch, statistician of the section, assisted in preparing the summary and editing the report.

Summary and Conclusions

As a result of the collective bargaining process there has come into being in all branches of railroad service a body of working rules usually incorporated in labor agreements. The first annual report of the National Mediation Board shows that, as of July 1, 1935, there were filed with the board in conformity with the requirements of the railway labor act, 3,016 such labor agreements, not counting those of the express and Pullman companies. Of the number, 2,335 were with Class I railroads (those with annual operating revenues above $1,000,000), 347 with Class II and Class III roads, and 334 with switching and terminal roads. Between one-third and one-half of the total agreements applied to train, engine, and yard service.

The uniqueness of the train- and engine-service rules has given rise to considerable discussion, sometimes biased by lack of familiarity with railroad labor practices. Under the spur of intensified competition the railroads themselves at times have raised the question of desirability of limiting or changing some of the rules, so that they might more readily compete with other agencies of transportation.

The railroads report to the Interstate Commerce Commission, currently and in some detail, the amount of wages paid to their employees. Their reports, however, particularly the portions

which list the payments to train- and engine-service employees, do not permit determination of the amounts of compensation for which each rule or type of rule is responsible. Thus, in the form in which train- and engine-service wage payments are reported, parallel items appear under the captions, "Compensation Paid for Straight Time Hours Worked" and "Compensation Paid for Straight Time Hours Paid For." The difference between the total amounts so reported is large and has grown in recent years. The conclusion has been drawn, improperly, that this difference represents money paid for time not worked. In fact, the difference is composed of two elements: namely, payments made for certain straight-time hours when employees are relieved from duty, and payments made for excess mileage run during straight-time hours.

In order to determine the basic facts which hitherto, apparently, have not been made clear, a special inquiry has been made for a sample period in sufficient detail to itemize the compensation paid to employees in the train and engine service under every type of rule which gave rise to a wage payment. The study was started in July, 1934, and the month of March, 1934, was selected as a convenient and representative survey period. The resulting analysis appears in the accompanying report and is summarized in the following paragraphs. While the knowledge of the amounts of compensation due train- and engine-service employees on account of the various rules may not wholly clear up the situation, it does indicate whether certain of the criticisms that have been made are warranted, and it suggests further lines of inquiry which may be necessary.

The rules which determine the earnings of train- and engine-service employees in "road" service provide for a combination of mileage and daily or hourly rates of pay. Popularly, the combination is known as the "dual" system of wage payment. The system was originated more than 50 years ago as an incentive to the men to speed up the service. It contains three main elements: (1) payment for straight time, which may be based on either hours worked or miles run, (2) payment for overtime, at pro rata or penalty rates, and (3) so-called "constructive allowances" and "arbitraries." The latter are payments principally for special or extra work, or for "waiting time" or other time when men are required to be on duty but are not producing transportation—in any event outside the scope of the time or duties for which compensation is provided by the regular hourly or mileage methods of pay. Minor portions of the straight-time compensation of certain employees in some branches of road service are paid under a system of daily and monthly guarantees.

Employees in "yard" service are paid on a straight-time hourly basis, since the mileage basis is not applicable to their work. Their overtime (accruing after 8 hours of service) is paid for usually at penalty rates. Yard employees also receive some pay in the form of constructive allowances.

Train- and Engine-Service Compensation in March, 1934

The present inquiry has revealed that during March, 1934, the total compensation of employees in the train- and engine-service of the Class I railroads, including switching and terminal companies, amounted to $37,430,691, as shown by Table 1. Of that amount, $28,596,523, or slightly more than three-fourths, was paid for straight-time hours actually worked. This was $5,492,737 less than the sum reported as paid "for straight-time hours paid for."

About three-fourths of the $5,492,737 (or $4,231,665) was paid for miles run in road service during straight-time hours in excess of the miles established in working agreements as the basic or minimum mileage for the corresponding number of hours.

Only the remainder, $1,261,072, or one-thirtieth of the train- and engine-service payroll, was paid for straight-time hours during which the men were relieved from duty.

One-fourteenth of the total ($2,609,259) was paid for overtime hours worked or held for work.

One-fiftieth of the total ($732,172) had its origin under rules governing payment of constructive allowances.

Straight-Time and Overtime Compensation

The difference of $5,492,737 between "Compensation for straight-time hours worked" and "Compensation for straight-time hours paid for" was equivalent to 15 per cent of the train- and engine-service payroll during the sample period under survey. In 1923 the difference amounted to 7.5 per cent of the payroll. In 1932 and 1933 it was 15 per cent; in 1934, 16 per cent. Existence of the difference and its constant increase in proportion to the payroll total appear to be chiefly responsible for the claim that train- and engine-service employees are paid for many hours during which they do not work.

Table 1—Compensation of Employees in Train and Engine Service, Class I Steam Railroads, March, 1934

Switching and Terminal Companies Included

Item No.	Item of compensation	Amount	Percent of total
1	For straight-time hours worked	$28,596,523	76.4
2	For "excess equivalent hours" (miles run in excess of speed basis)	4,231,665	11.3
3	Total for actual time worked and miles run in straight-time hours	32,828,188	87.7
4	Other payments for straight-time (time not on duty)	1,261,072	3.4
5	Total payments for straight time	34,089,260	91.1
6	For overtime[1]	2,609,259	7.0
7	As constructive allowances and arbitraries[2]	732,172	1.9
	Total compensation	$37,430,691	100.0

[1] All overtime compensation is for time actually worked or held for work. Compensation is usually at a higher rate of pay than for straight time.
[2] For analysis see Table 2.

The foregoing summary shows, however, that three-fourths of the amount in question was paid for service rendered in miles of transportation run during straight-time hours, at speeds faster than the "speed basis" adopted as a standard for the purpose of determining a day's pay. Money so earned cannot fairly be considered a payment for time not worked. It is a payment for service rendered, and is proportionate thereto. It has grown because the employees' mileage output per hour has increased, and their return in wages has therefore increased also.

It should be observed that any system of wage payment by results has similar effects over a period of time. As the output per employee increases, the labor cost per unit produced tends to decline and the wage income to increase. The fact is often advanced as the principal justification for such methods of wage payment.

Concomitantly with the increase of straight-time mileage output, the compensation paid for overtime, much of which is computed at punitive rates, has decreased in proportion. In 1923, 15.6 per cent of the train- and engine-service payroll was paid for overtime. In 1933 and 1934, overtime payments had decreased to about 6 per cent. There is a direct relationship between the increase in straight-time excess mileage payments and the decrease in overtime. The changes result from the higher speeds at which trains are operated, since overtime accrues to a road service employee only when he completes a run at a speed less than the basis fixed by the rules. The increase in compensation which train- and engine-service employees have received as a result of faster train speeds thus has been counterbalanced in part by a decrease in overtime payments; and, insofar as punitive overtime has been replaced by straight-time pay at a lower rate, the railroads have not only obtained faster train speeds but have saved money as well.

Payments for "Time Not Worked"

The remaining one-fourth of the difference between money paid for "straight-time hours worked" and "straight-time hours paid for" was paid for straight-time hours during which employees were relieved from duty. For the sample period under survey, the payments so classifiable amounted to $1,261,072, or 3.4 per cent of the total compensation. They arose largely through the system of daily and monthly guarantees. The daily guarantee applies to almost all train- and engine-service employees and tends to discourage the practice of calling a man for duty when there is not a full day's work available for him. A restricted number of employees are subject also to monthly guarantees. Like the stenographer, the professional man, or the executive, they receive their guaranteed monthly income even though there may be slack days, on which a full day's work is not available. The guarantees in question are a stabilizing factor, which in the railroad industry has received the sanction of long experience.

It may be pointed out that even if the mileage system of wage

payments were to be abandoned and all train- and engine-service employees paid on a time basis only, with or without guarantees, the payments for "time not worked" might not decrease. For many employees, the hours which may be worked or the miles run per day are variable and irregular because of traffic demands and operating conditions over which the men have little or no control. If wages were paid on a time basis there still would be many hours during time on duty in which no work could be performed. Many wage-payment plans of other industries, involving payments by results, recognize this situation and make specific allowances for "idle" time. The railroads, moreover, would lose the advantage of the incentive which the mileage system of wage payment provides for employees' cooperation in the introduction of heavier or faster motive power and speedier train operation.

Constructive Allowances

In Table 2 the constructive allowances paid during the period under survey (Table 1, Item 7) have been broken down into general classes. The rules may be classified in three main groups:

(1) *Rules governing payments for extra work or special service.*—Payments under such rules amounted to $261,700, or 36 per cent of the total constructive-allowance payments. Of that amount, $148,955 was paid for switching. The remainder was paid for hostling, doubling hills, splitting trains at sidings, road work done by yard crews, and many miscellaneous special or extra services.

(2) *Rules requiring payment for waiting time.*—Payments amounting to $427,567, or 58 per cent of the total constructive allowances, were made in return for time during which it was

Table 2—Constructive Allowances Paid to Employees in Train and Engine Service, Class I Steam Railroads, March, 1934

Switching and Terminal Companies Included

Item No.	Type of rule	Amount	Percent of total constructive allowances	Percent of train and engine payroll
1	Deadheading	$248,175	33.9	0.663
2	Switching	148,955	20.3	.398
3	Terminal delay	88,303	12.1	.236
4	Held away from home terminal	78,689	10.7	.210
5	Miscellaneous special or extra work	73,523	10.1	.196
6	Time not worked	28,183	3.8	.075
7	Hostling	26,106	3.6	.070
8	Road work by yard crews	13,116	1.8	.035
9	Reported and relieved at different points	9,480	1.3	.025
10	Suspensions, runarounds, called and not used	5,176	0.7	.014
11	Miscellaneous waiting or unproductive time	2,920	0.4	.008
12	Miscellaneous and unclassifiable payments	9,546	1.3	.026
13	Total, all payments of constructive allowances and arbitraries.	$732,172	100.0	1.956

impossible for an employee to add to his total of miles run or work done, but which was required nevertheless in course of duty. By far the largest share of the sum, $248,175, was paid for time spent by employees "deadheading" under orders to and from outside points or back to home terminal when no return runs were available for them. The next largest sum, $88,303, was paid for time lost in delays at initial and final terminals. The only other large item, $78,689, was paid in compensation for time lost by employees in pool freight and unassigned service while held away from home terminal.

(3) *Miscellaneous rules.*—A third group of rules, difficult to classify, provide for compensating employees for certain losses of wages or of the opportunity to work. Such payments amounted to $42,905, or 6 per cent of the sum paid under all constructive-allowance rules.

The entire sum paid under rules providing for constructive allowances and arbitraries is small compared with the total train- and engine-service payroll. Except for minor amounts paid in compensation for loss of opportunity to work, none of the payments appears to have been made without some return in the form of either special or extra service rendered or time spent in line of duty in addition to the time paid for at the regular mileage of hourly rates. There may be situations, however, in which certain rules or interpretations have resulted in duplicate payment for the same set of hours, or in which the effect of a rule is not limited to the amount of compensation it determines. If such instances exist, they can be revealed only by further inquiry.

Annual Earnings Under the Rules

Moreover, if any train- or engine-service employee is able to realize excessive earnings under the present system of rules governing wage payments, the number of such employees is insignificant. A study of annual earnings of railroad employees, recently completed by the co-ordinator's Section of Labor Relations, shows that only about one-tenth of one per cent of the train- and engine-service employees earned an average of $300 or more per month in 1933. Less than 15 per cent averaged $200 or more per month in the same year. The average earnings of all employees in this service in 1933 were less than $1,800 per year, or $150 per month. In 1929, less than 5 per cent of these employees earned as much as $3,600 per year, or $300 per month, and the average annual earnings for all were slightly less than $2,300.

Considered by occupations, out of 15,000 employees carried on record as road conductors and engineers by the 14 Class I railroads on which the wage study was made, only 40 earned $3,600 or more in 1933. In 1929 about 1,500 out of 15,000 in these occupations earned $3,600 or more. Of 9,612 employees classified as road brakemen and firemen on the 14 railroads, only 33 earned $2,800 or more in 1933, while 872 out of 11,842 earned $2,800 or more in 1929. In yard service, only 4 out of 1,589 engineers and conductors earned $3,000 or more in 1933, and only 54 out of 1,280 in 1929.

In connection with annual earnings, attention perhaps should be called to the mileage limitations which apply to many train- and engine-service employees. The employees to whom such limitations apply may run only a certain agreed-to number of miles per month.

Concluding Statement

The impression that labor agreement rules necessarily add to the cost of railroad operation, and that if the rules were eliminated the labor cost of the railroads would be greatly reduced, is erroneous. If there were no jointly agreed-to rules, it would still be necessary for railroad managements to regulate conditions of employment by general orders and instructions in the nature of rules. In such orders and instructions it is probable that most of the provisions of the present rules would find a place, for it would still be necessary for the managements to reimburse their employees for services rendered, in accordance with a suitable system of payments. The mere fact that the rules are jointly agreed-to, that is to say, are the product of collective bargaining, does not inevitably make them more costly to the railroads than if they were simply promulgated by management. It is distinctly in the interest of efficiency, economy, safety, and good service, that these rules should be the product of agreement between the parties at immediate interest, namely, the employees and the railroads. Hence, the injunction by Congress to the parties concerned to exert every reasonable effort to make and maintain agreements, and the provisions of the Railway Labor Act establishing the National Mediation Board as a federal agency to assist in the consummation of such agreements.

It is obvious that not every point which may come into question concerning the rules is settled merely by having an accurate knowledge of the amounts of compensation paid under each type of rule. For instance, if the railroads incur operating handicaps, or extra costs of service, in order to avoid the expenses attributable to certain rules, the effects do not appear in the amount of compensation paid under any particular rule. Nor does it follow that the elimination of such rules would necessarily result in a gain for the railroads, all things considered. Such costs, like th possible expense of duplicate payments, and the possible service or operating benefits which might follow the changing or elimination of certain rules, can be revealed only by further inquiry, preferably on the ground where the rules are in day-by-day operation.

Furthermore, this study does not attempt to pass judgment on the adequacy of the rules, in all cases that may arise under changing operating conditions, to accomplish effectively the purposes for which they were first established. There is some evi-

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Recoupering Damaged Crates Reduces Claim Costs

Freight Claim Division Meeting

Greater initiative on the part of mechanical departments will result in substantial reductions in payments

THAT greater initiative by mechanical departments in the improvement of equipment to meet present and future transportation requirements will not only result in less damage to freight but will reduce car and track maintenance as well, was the conclusion reached at the forty-fifth annual session of the Freight Claim division of the Association of American Railroads at the Hotel Sherman, Chicago, on June 2 to 4, Chairman J. L. McCormack, superintendent of freight loss and damage claims of the St. Louis-San Francisco, presiding. This conclusion was reached following a discussion of damage to lading resulting from the action of freight car trucks and bodies under the greatly increased train speeds of today.

Besides the discussion of the relation of equipment design to freight damage, the meeting gave consideration to other important and timely subjects, including claim settlements, loss and damage prevention and principles and practices for the investigation and disposition of freight claims.

The program also included an address by Judge R. V. Fletcher, vice-president and general counsel of the Association, who discussed claim settlements, and by H. G. Taylor, chairman of the Western Association of Railway Executives, who spoke on the general problems of the railroads.

Field Men Also Convene

An innovation in the annual session was the holding of an informal conference of traveling field men in conjunction with the main meeting. This meeting of men representing railroads from all sections of the country and Canada, was called in the belief that the work of loss and damage prevention field representatives, bureau inspectors and others employed in a similar capacity would be aided by the consideration of subjects of special interest to these men in which they could have the opportunity to present their experiences. Because of the importance of these men in developing loss and damage prevention data it is planned to hold a similar meeting each year.

Officers elected for the ensuing year are: Chairman, W. C. Johnson, freight claim agent of the Chicago & North Western; first vice-chairman, J. B. Mordecai, traffic manager of the Richmond, Fredericksburg & Potomac, and second vice-chairman, S. R. Biering, assistant general claim agent of the Gulf, Colorado & Santa Fe.

The members decided to hold the next annual meeting in Toronto, Ontario, on a date to be selected by the general committee.

Car Bouncing Damages Freight

The discussion of the relation between equipment and damage to freight was the result of conditions which have developed during the last two years coincident with increasing train speeds and the urgent need for preventive measures in view of the still greater train speeds in prospect during the next few years. During the discussion of this subject Walter Bohnstengel, assistant engineer of tests of the Atchison, Topeka & Santa Fe, reported that "the conclusions reached as a result of tests are that freight cars equipped with 1933 Standard A.R.A. or old Standard A.R.A. coil springs develop bouncing at critical speeds which is more pronounced at half load than at full load. This bouncing can be reduced or practically eliminated by the use of various devices in conventional trucks or by special trucks. The use of these devices should effect large savings by the reduction of vertical oscillation in cars that operate at speeds above 36 m.p.h. if wheels are true, and at lower speeds if wheels are not true.

"While we may be most vitally interested in the reduction of lading damage, because of its immediate concern as regards the relation of railroad and shipper, there is also the protection that is afforded to equipment and track by keeping coupling speeds within the protective capacity

of draft gears and reducing vertical oscillation by suitable snubbing devices in the truck spring arrangement. For example, one owner of private tank cars has some truck spring snubbers in service and is seeking test data to determine if he is justified in more extensive snubber application, not for the protection of the oil in the cars, but to reduce the maintenance cost of the equipment.

"From these facts it will be seen that some progress is being made toward the reduction of lading damage. To eliminate end shock, draft gears are being improved to cushion these impacts better and to stay operative at all times. Tests have determined that vertical oscillation or bouncing is not due to a faulty condition of equipment but because any car, even when in first class condition, has a certain period of vibration, depending on the load and springs. Such cars, as they move in trains, receive periodic impacts from rail joints, and if the car speed is such that the frequency of impact and the natural vibration of the spring system coincide, harmonic vibrations occur that may result in springs going solid, thereby causing spring breakage or shocks to the car body that tend to lift the lading off the car floor. This critical condition may exist in a rather narrow speed range. It may be at its worst at 47 m.p.h. for one spring and load and at 51 m.p.h. for another spring, while at a speed of 5 m.p.h. above or below the critical speed this disturbance may not be damaging. It was found in tests that the introduction of some spring friction or snubbing in the spring system greatly improved the riding conditions. It therefore follows that any reduction of lading damage means a reduction of maintenance costs to equipment and track."

Suggestions for Prevention

Other loss and damage prevention subjects discussed included damage to fresh fruits, melons and vegetables, carload damage and less carload loss and damage. In general the suggestions for the prevention of damage embraced better loading, stowing and packing, adequate containers and more complete inspection reports to develop the causes of damage so as to assist shippers in the proper preparation of shipments. Suggestions included a reduction of the bulge pack and the cessation of overpacking lettuce, carrots and other products, which cause containers to break during transit. The Committee on the Prevention of Loss and Damage, in its report, recommended that members and bureaus advocate the use of parchment lining paper, base filler board, a reasonable bulge and a more efficient recoopering when the Los Angeles crate is used; recommend the use of the straight side or tub baskets to replace bushel baskets and hampers; confine sampling to legitimate sampling; and make detailed reports of the causes of damage.

G. W. Lupton, assistant to the vice-president of the Atchison, Topeka & Santa Fe, in discussing damage resulting from inspection and sampling in transit, emphasized the need for remedial action, suggesting that the claim agents and operating officers who are responsible for the policing of this practice, work out the needed correction. That a very appreciable amount of the total damage can be attributed to inspection and sampling in transit, he said, was revealed in a recent check of a number of test cars of citrus fruit in which the slack was taken up through the medium of a new type of squeeze.

"Another matter," he said, "which I believe could very well be placed before operating officers, is the need for bracing partially unloaded cars before allowing them to be moved. Our experience in originating territory has shown conclusively the need for protecting partially loaded cars, and by the same token the need exists for protecting partially unloaded cars. When a switching locomotive switches a track on which there are partially unloaded cars, the contents of which have not been braced, damage is very apt to result. Many inspection reports covering car-door inspections reflect little, if any, damage, whereas subsequent reports show heavy damage as the result of rough handling, and in these instances, failure to break down the load and brace it can be the only cause."

Principles and Practices

Following the report on principles and practices for the investigation and disposition of freight claims, submitted by the general committee, several amendments were adopted which more accurately define the limitations of the code and promote uniformity of application. These amendments were designed to establish the validity of inspections, and provide a basis for determining the value of products, the extent of damage and the actual loss incurred by the shipper or receiver, based upon prevailing values.

The report of the general committee, in discussing principles and practices, said, "the year just ended has practically completed two full years since principles and practices were adopted and your committee submits that this legislation has proven itself one of the most far-reaching efforts which the division has undertaken. The membership as a whole has clearly appreciated the value of this activity which not only stabilizes our claim adjustments along uniform lines but in addition thereto insures individual member lines against claim settlement policies on the part of its competitors which might, in the absence of uniform principles and practices, work out detrimentally to it. There is now, and has been since the initiation of our principles and practices, a very apparent and sincere desire on the part of our members in all territories to adhere uniformly to the provisions of the code."

In order to facilitate the working of the division and to promote efficiency in the handling of claims, the Committee on Freight Claim Prevention of the Freight Claim division has been consolidated with the Committee on Freight Handling Service of theTransportation division, the new committee being known as the Committee on prevention of Loss and Damage. All branches of the Association, including express service, are represented on this committee. With this arrangement, shippers contact one committee on all questions relating to proper packing, loading and handling of freight. Another step in this direction was taken when the general committee released its jurisdiction over the rules and regulations covering interline apportionment of overcharge claims. These are now under the jurisdiction of the Accounting division of the Association.

Train Service Rules Surveyed

(*Continued from page 954*)

dence, for instance, of conflict between two or more rules in the same agreement as applied to a given situation, particularly if the situation is novel, which tends to give rise to disputes. There is evidence, also, of attitudes in regard to the application of the rules, which sometimes produce an insistence upon the letter of the law without regard to considerations of equity, and sometimes result in denial to the employees of some of the safeguards which the rules are intended to afford.

The subject is so important that it is mentioned here even though it is outside the scope of the present inquiry. There is an obligation upon both men and management to interpret and apply the rules in a spirit of fair play. Neither party to the contract that contains them can afford to further a partisan advantage at the risk of imperiling this essential purpose.

Why "Co-ordination" Comes Slowly

C.N.R. chairman finds railway officers lacking in will to co-operate, reluctant to economize at labor's expense

EARLY last week the House of Commons committee on railways at Ottawa met to give Hon. Charles P. Fullerton, chairman of the board of trustees, of the Canadian National, an opportunity of replying to the charges made the previous week by Hon. C. D. Howe, Minister of Railways, that Mr. Fullerton was being relieved of his post (through the legislation just passed by the House but which has yet to run the gauntlet of the Senate) because he was not a railway man; and that, in his two years and a half as head of the Canadian National, there had been no improvement in the situation and there had been a retardation in joint economies as between the government road and the Canadian Pacific.

Mr. Fullerton read a statement to the committee in which he said he and his two colleagues had never been charged with being moved by political considerations, and he asserted that "When all the factors affecting the railway are taken into consideration it is my confident claim that the railway is more economically operated, that its efficiency as a transportation system is greater, and that it is better equipped, from the standpoint of prospective profit, to deal with business expansion than it ever was before."

Continuing, he said in part:

Complexity of Technical Details

"It must be kept in mind that the obligation to agree upon co-operative measures to effect economies and provide for more remunerative operation, is cast equally upon the Canadian National and the Canadian Pacific, and not upon the former only. It is perhaps only natural that public attention should be directed more particularly to the part played by the National Railways, but no impartial and fair survey of the situation will confine criticism—if room for such exists—solely to one system.

"Only those intimately associated with the activities and negotiations involved in reaching co-operative agreement between the railway companies can properly appreciate the difficulties which constantly arise. For the compilation of data and the development of necessary details and information, the trustees are entirely in the hands of their technical officers. From the time the trustees entered upon office they have been persistent in directing their own attention and that of the officers under them to this very important subject. They have taken every step to avoid delays, and in so far as they could, have insisted upon constant application on the part of their technical officers and advisers to the study and development of co-operative plans. They have given full weight to the views of those professionally possessing technical knowledge and skill, and in no case—with the limited exception of the pace at which negotiations were being conducted—have they found themselves in conflict with the views of their experts from the president down.

Officers Lack Will to Co-Operate

"It is my view that quicker progress could have been made had there been present in the officials of both railroads, a greater measure of the will to co-operate. There could, in my opinion, easily be a more enthusiastic disposition to overcome obstacles in the way of co-operative progress, and it may be useful to devote a little time to the consideration of some of the aspects of co-operation which influence the average railway official.

"In the opinion of Mr. Eastman, (Federal Co-ordinator of Transportation in the United States) the tendency of railroad management to cling to assumed individual advantages in preference to those which would be gained by co-ordination or correlation, is ingrained, and it may be impossible to overcome. Many railroad executives have an instinctive distrust of co-ordination projects, especially those which are large in scope. Such projects run counter to their training, and often to their self-interest. The executive officers have grown up in the business, and this idea of conflicting interests is ingrained and predominant. Their habit of mind is intensely individualistic and suspicious of collective action. My observation leads me to the belief that we have a similar situation in Canada.

"Another factor to which attention must be given is that almost every scheme for effecting further economies has a direct bearing on some community, and the interests of each community have to be seriously considered. It is a remarkable feature of the public's attitude towards co-operative and other economy measures that, while there is universal approval of these in the abstract, any concrete step which affects employment in, or the supposed importance of a community, is immediately faced with all the opposition which that community can command.

Crisis Seen as Merely Temporary

"There is still another and very real impediment in the way of further extensive economies, and of co-operation. Throughout the whole service there is a widespread conviction that the difficulties of the Canadian National (and no doubt this also applies to other railroad systems) are of a purely temporary nature brought about by times of depression, which in due course will pass. Buoyed up in this belief, there is a reluctance to take steps permanently diminishing the assets and importance of the railway, and one can observe in the initiation and development of co-operative plans, a disposition to take steps which can later be retraced, rather than radical methods which would leave a permanent imprint on the system.

"But perhaps the greatest difficulty in the way of expediting further extensive economies concerns labor. To reduce expenses on any large scale men must be displaced, and if serious hardship and unrest are to be avoided, some form of dismissal pay or compensation should be considered. It is my personal view that a great deal more progress might be made in co-operative measures for economy, as well as in other economy measures, if some plan for employee dismissal compensation were worked out and adopted. I believe it to be a fact that the officials of the railroad, contemplating changes designed to secure economy but which involve

putting men out of work with little hope of re-employment, are influenced by humanitarian feelings, and naturally the men resist all such measures to the limit. It does not seem unreasonable to urge that part of the advantage to the employers should be shared with labor, rather than that the whole burden should be borne by labor.

Labor Cannot Be Asked to Bear Entire Burden

"The Canadian National-Canadian Pacific Act requires that both the burden and the advantage should be shared by the two companies. It seems to have been overlooked that the joint advantage can be secured only by transferring the burden to labor. A more equitable arrangement with labor appears to be required and should be provided. If this were done, one great preliminary step towards the accomplishment of any radical changes which might displace labor would be made. The natural reluctance of the officials to give up that to which they are accustomed, and perhaps that which they have helped to create or develop, is understandable, but it must take second place to the national economy. Ways and means must be found of obtaining a better co-operative atmosphere. The campaign for amalgamation did not help the situation in this respect. Uninformed comparisons of relative operating efficiency between the two organizations do not help. The disposition towards each other and towards co-operation itself, of the two organizations, does not help.

"I am convinced that the greatest obstacle to co-operative measures is consideration for the men who would be displaced by their adoption. An agreement has been reached between the railway executives and organized labor in the United States providing for the payment of a measure of compensation to employees thrown out of work by consolidation of railway facilities, and I understand that the British railways also made some provision for employees displaced as a result of the amalgamation of British railways into four systems.

"I have reached the conclusion that the Government, the railways, and the representatives of railway labor, should discuss this matter together with a view to the adoption of some arrangement for two Canadian railroads as will afford reasonable protection against hardship on the part of those employees, who after long years of service, may be displaced by the adoption of co-operative measures."

Freight Car Loading

WASHINGTON, D. C

REVENUE freight car loading in the week ended May 30 totaled 646,859 cars, a decrease of 36,547 cars as compared with the week before, because of the holiday on May 30, but an increase of 84,177 cars, or 15 per cent, as compared with the corresponding week of last year. All commodity classifications except coal and live stock showed increases as compared with last year's figures and coal and coke showed increases as compared with the week before. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading

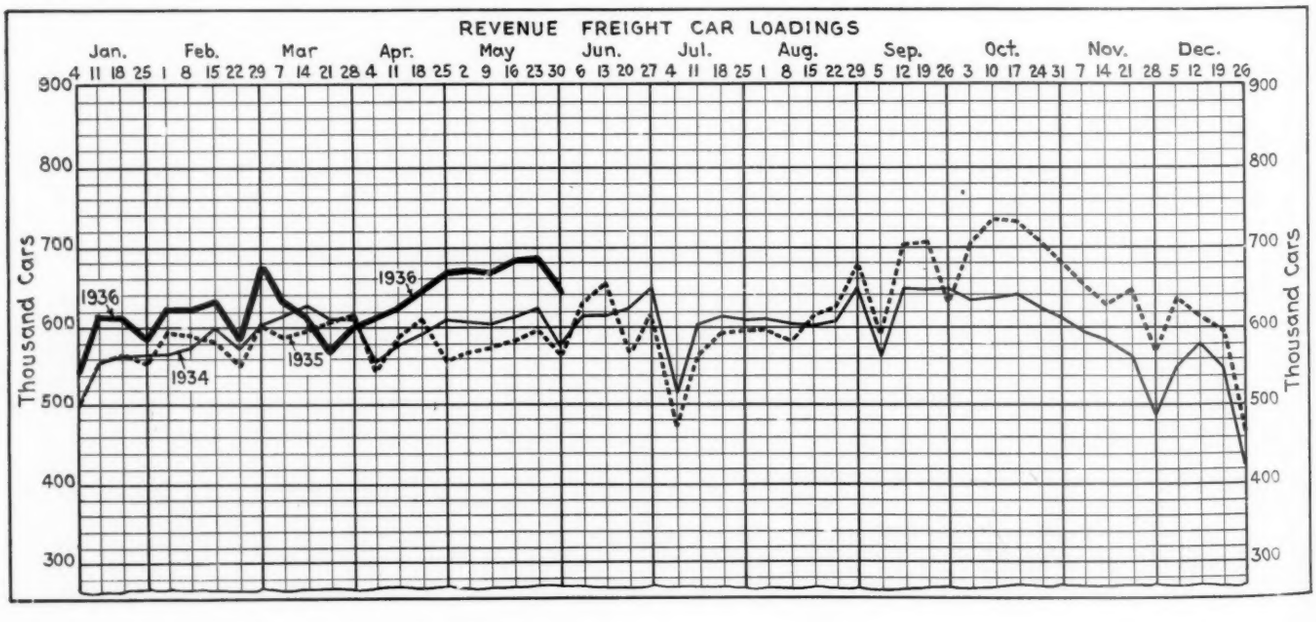
For Week Ended Saturday, May 30

District	1936	1935	1934
Eastern	144,688	127,412	129,535
Allegheny	133,765	114,145	116,192
Pocahontas	46,771	42,539	41,363
Southern	92,095	83,060	83,072
Northwestern	99,091	78,510	82,667
Central Western	85,208	73,117	81,177
Southwestern	45,241	43,899	45,650
Total Western Districts	229,540	195,526	209,494
Total All Roads	646,859	562,682	579,656
Commodities			
Grain and Grain Products	29,734	23,255	27,151
Live Stock	10,343	11,104	15,756
Coal	114,022	116,607	101,600
Coke	9,078	6,162	7,068
Forest Products	31,155	24,648	24,442
Ore	44,655	30,061	30,319
Merchandise l.c.l.	144,988	137,990	143,589
Miscellaneous	262,884	212,855	229,731
May 30	646,859	562,682	579,656
May 23	683,406	598,396	625,990
May 16	681,447	582,950	612,331
May 9	668,935	575,020	602,798
May 2	671,154	568,927	605,246
Cumulative Total, 22 Weeks	13,803,858	12,694,994	12,931,649

Car Loading in Canada

Car loadings in Canada for the week ended May 30 totaled 40,241 cars, as against 43,834 cars last year, it is announced by the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
May 30, 1936	40,241	23,776
May 23, 1936	44,004	24,352
May 16, 1936	44,928	24,551
June 1, 1935	43,834	19,887
Cumulative Totals for Canada:		
May 30, 1936	942,175	521,349
June 1, 1935	935,411	495,522
June 2, 1934	916,318	516,133



NEWS

C.N.R. Directors Bill Now Before the Senate

Proposal to set up new board and recast management passed by House of Commons

Without a murmur of dissent third reading and final passage were given in the House of Commons at Ottawa last week to the bill of Hon. C. D. Howe, Minister of Railways, to substitute a board of seven directors for the present board of three trustees of the Canadian National, and in other respects to recast the management of the government road. The measure now goes to the Senate.

During the final sitting the Labor members made persistent efforts to get incorporated into the legislation a provision for dismissal compensation, but the Minister made it plain that while he was favorable to such a provision, he felt it proper to give the managements of the two railways and the employees' organizations further opportunity to reach agreements of their own. Mr. Howe assured the House that if it developed that such agreements could not be reached, he would next session favorably consider legislation to facilitate compensation for employees displaced as a result of operating economies.

A charge by Mr. Howe, Minister of Railways, that Hon. C. P. Fullerton, chairman of the board of trustees of the Canadian National, had been disloyal to the present Government, produced a storm of controversy in the House earlier in the same sitting.

"As long as this Government is responsible for the Canadian National Railways and its operation, it wants a management at the head that is loyal to this Government," declared Mr. Howe to the accompaniment of applause from Liberal members. "Since this Government took office the chairman of the railway has spent more time in Ottawa in the offices of members of the late Government than he has in the offices of the present Government."

This brought Conservative leaders to their feet, demanding that Mr. Fullerton be given full opportunity to defend himself against the charge, and the five exministers present each rose and denied that he had had any conversation with Mr. Fullerton since the change of Government, although the leader of the Conservative Opposition, Rt. Hon. R. B. Bennett, said he had seen the chairman on only one occasion.

Air-Express Business Up

Air express revenues over the Railway Express Agency's contract airlines show for April, 1936, an 85 per cent gain over the revenue of the same airlines in April, 1935. The Express Agency's expanded air service became effective in February, 1936, in which month the revenue showed a 63 per cent increase over the combined express revenue of the contract airlines for February, last year. In March the gain was 75 per cent while for the first three months of the co-ordinated operation the increase in revenue amounted to 76 per cent.

Motor Carrier Act to be Explained

John L. Rodgers, director of the Bureau of Motor Carriers of the Interstate Commerce Commission, will speak on Administration of the Motor Carrier Act at a luncheon to be given by the Traffic Club of Chicago on June 16.

Depreciation Accounting Prescribed for Express Companies

The Interstate Commerce Commission has issued an order prescribing a system of depreciation accounting for express companies to become effective on January 1, 1937.

Master Boilermakers' Convention

The annual meeting of the Master Boilermakers' Association will be held September 16 and 17, 1936, at the Hotel Sherman, Chicago. The Association's officers and committee members have been at work preparing papers and reports for discussion at the meeting. There will be no exhibits; this will be strictly a business meeting.

Chart to Guide Shippers In Selection of Cars For Loading

The Car Service Division of the Association of American Railroads is giving wide distribution among shippers to a chart to guide them in the selection of box cars for loading, showing the home districts for all principal ownerships of cars. It is pointed out that observance of the principles outlined with the chart in selecting empty cars for loading will greatly contribute to the economical operation of the railroads by preventing unnecessary empty mileage. The use of a foreign car for loading to home territory instead of loading a local car away from home is said to be most important, since this will often prevent the movement of cars empty in both directions.

Present Recovery Cited as Slowest in History

Dunn says business, with labor and government, to blame for sluggish revival

"Recovery from the present great depression has thus far been the slowest ever made from any great depression in the history of the United States, and it strongly behooves us to inquire why, and to do what we can to stimulate the recovery actually under way," said Samuel O. Dunn, chairman of the Simmons-Boardman Publishing Company and editor of *Railway Age*, to the Southwest Regional Shippers Advisory Board in an address at Fort Worth, Texas, on June 9.

"In his 'Manual of Railroads,' in which he gave statistics for 1879, showing the completeness of the recovery that had occurred from the worst depression that ever preceded the present one, Henry V. Poor said: 'Fortunately for the country there has been during the past year an unusual freedom from adverse legislation tending to regulate the operations of our railroads, and as a consequence the companies have been left free to work out the problems of cheap transportation governed only by the inevitable laws of trade.' Likewise, other industries during the depression of the seventies, and the railroads and other industries during the depression of the nineties, were left free to work out their problems 'governed only by the inevitable laws of trade.'

"This was in striking contrast to what has been done during the present depression, when government, organized labor and organized business have all joined in efforts to prevent the operation of the 'inevitable laws of trade.' They have not prevented their operation; but they have succeeded in causing them to so operate as to retard increases of production and traffic, and consequent reductions of unemployment and relief rolls.

"By artificial policies and practices they have maintained or increased hourly wages, costs of production, prices and rates in industry and transportation as was never done before in any depression. Government has been interfering in all industries, whether naturally monopolistic or otherwise. Ostensibly this has been done principally to maintain or increase the purchasing power of employees in industry and transportation. But it has ignored the vitally important fact that the products and services of industry and transportation

must be sold principally to the large majority of the population that does not derive its income from industry and transportation. Therefore, the tendency of these measures has been to curtail the effective demand of a large majority of the population for the products and services of industry and transportation.

"If we are to make the truth about business more to our liking we must face facts. Let us look at the record of the three greatest depressions in our history as indicated by railroad statistics of freight moved, which afford the best single measure of the total volume of production and distribution of commodities, and, therefore, of the total volume of business of all kinds done.

"Six years after the panic of 1873 recovery from the depression which followed it was so complete that in 1879 the amount of freight moved by our railroads was 47 per cent larger than in any previous year.

"Six years after the panic of 1893 recovery from the subsequent depression was so complete that the amount of freight moved by railroads was 30 per cent more than in any previous year.

"Six years after the panic in 1929 the amount of freight moved by our railways was 40 per cent less than in 1929, their gross earnings 46 per cent less and their net operating income 60 per cent less. The diversion of freight to other carriers can account for only a part of this great difference. Railroad loadings were 13 per cent larger in the first five months of 1936 than in 1932 and 26 per cent larger than in 1933; but they were still 35 per cent smaller than in 1929. Their increase within the last three years has been only one-fifth as great as the decline that occurred in the preceding three years. At this rate it would take until 1949 to make them as large as in 1929, and thus indicate complete recovery.

"It is absurd to say that this depression has been longer and more profound than any previous one because of fundamental changes in economic conditions in this country. As was true after the great depressions of both the seventies and the nineties, there exists a great potential demand for industrial products and transportation service. In fact, this potential demand is now far more enormous than ever before. All that is required to cause a larger increase in production, transportation, employment and prosperity than ever occurred is to adopt the government and business measures and policies necessary to convert this *potential* demand into an *effective* demand. Allow this potential demand to become effective, and the total volume of business and employment will, within a few years, become vastly larger than they ever were before.

"The railways need only one thing to rehabilitate themselves financially and physically, and to render better service than ever before. This is a further increase of traffic, unaccompanied by further unnecessary and artificial increases in operating expenses. Their traffic, both before and during the depression, has been adversely affected by competition of other carriers which has been unfair because competing carriers have been subsidized and have not been regulated as the railways have been. But the principal reason why the freight business of the railways is still one-third smaller than in 1929 is lack of adequate increases in production and construction in other industries from which they derive the bulk of their traffic."

Railway Employment Increased in May

Class I railroads, excluding switching and terminal companies, had 1,067,964 employees as of the middle of the month of May, according to their reports compiled by the Interstate Commerce Commission. This was an increase of 1.76 per cent as compared with the number in April and an increase of 7.11 per cent as compared with the number in May, 1935. The employees in the maintenance of way and structures group showed an increase of 10.74 per cent in a year, while the train and engine service group showed an increase of 8.08 per cent.

Traffic Club of St. Louis

The Traffic Club of St. Louis has elected the following officers for the ensuing year: President R. C. Trovillion, freight traffic manager of the Missouri-Kansas-Texas; first vice-president James J. Hoban, traffic manager of the Hunter Packing Company; second vice-president, W. C. Bergmann, manager of the National Carloading Corporation; third vice-president, Frank Mullivan, vice-president of the Crunden-Martin Manufacturing Company; fourth vice-president, C. B. Sudborough, assistant vice-president of the Pennsylvania; fifth vice-president, Edward F. Ledwidge, general traffic manager of the Granite City Steel Company; secretary, A. J. Koke, traffic manager of A. Leschen & Sons Rope Company, and treasurer, W. A. Vahle, traffic manager of the Monsanto Chemical Company.

Net Deficit for March Increased by Social Security and Retirement Acts

Excise taxes levied against the railroads under the social security act and the railroad retirement act brought about an increase in their net deficit for the month of March as compared with that for March,

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS

Compiled From 138 Reports (Form IBS) Representing 144 Steam Railways

TOTALS FOR THE UNITED STATES (ALL REGIONS)

For the month of March 1936	For the month of March 1935	*Income Items*	For the three months of 1936	For the three months of 1935
$35,205,513	$38,129,873	1. Net railway operating income	$104,564,978	$86,366,523
11,927,043	13,563,477	2. Other income	33,794,409	37,442,334
47,132,556	51,693,350	3. Total income	138,359,387	123,808,857
1,479,490	1,391,991	4. Miscellaneous deductions from income	4,567,755	4,307,399
45,653,066	50,301,359	5. Income available for fixed charges	133,791,632	119,501,458
		6. Fixed charges:		
11,168,789	11,048,203	6-01. Rent for leased roads	33,149,576	32,959,838
41,580,092	42,196,074	6-02. Interest deductions	124,879,399	126,231,616
220,816	218,917	6-03. Other deductions	656,296	655,485
52,969,697	53,463,194	6-04. Total fixed charges	158,685,271	159,846,939
‡ 7,316,631	‡ 3,161,835	7. Income after fixed charges	‡ 24,893,639	‡ 40,345,481
999,831	999,831	8. Contingent charges	3,029,495	3,014,495
‡ 8,316,462	‡ 4,161,666	9. Net income	‡ 27,923,134	‡ 43,359,976
16,222,679	16,346,001	10. Depreciation (Way and structures, and Equipment)	48,390,712	48,889,376
1,587,227	1,345,023	11. Federal income taxes	4,940,331	4,013,028
		12. Dividend appropriations:		
1,317,625	4,006,540	12-01. On common stock	15,597,027	20,641,477
419,325	.....	12-02. On preferred stock	4,026,917	3,295,850

Selected Asset Items	Balance at end of March 1936	Balance at end of March 1935
13. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	$694,720,545	$775,915,597
14. Cash	$445,821,062	$338,416,968
15. Demand loans and deposits	4,691,223	10,692,042
16. Time drafts and deposits	30,281,892	40,800,230
17. Special deposits	140,939,641	76,932,498
18. Loans and bills receivable	2,596,340	5,004,715
19. Traffic and car-service balances receivable	61,063,591	57,810,956
20. Net balance receivable from agents and conductors	45,628,267	43,418,563
21. Miscellaneous accounts receivable	140,192,364	143,987,070
22. Materials and supplies	294,315,208	307,439,159
23. Interest and dividends receivable	24,288,836	37,588,588
24. Rents receivable	2,219,096	2,976,386
25. Other current assets	5,780,101	10,705,865
26. Total current assets (items 14 to 25)	$1,197,817,621	$1,075,773,040
Selected Liability Items		
27. Funded debt maturing within six months*	$327,992,282	$236,888,756
28. Loans and bills payable†	$309,356,610	$318,356,653
29. Traffic and car-service balances payable	74,249,230	70,439,529
30. Audited accounts and wages payable	221,709,251	207,875,993
31. Miscellaneous accounts payable	79,445,686	91,488,437
32. Interest matured unpaid	456,802,388	346,007,794
33. Dividends matured unpaid	13,441,119	16,086,081
34. Funded debt matured unpaid	413,922,675	282,942,813
35. Unmatured dividends declared	1,542,032	1,122,886
36. Unmatured interest accrued	105,588,783	105,756,285
37. Unmatured rents accrued	31,176,110	30,496,758
38. Other current liabilities	26,650,698	26,908,513
39. Total current liabilities (items 28 to 38)	$1,733,884,582	$1,497,481,742
40. Tax liability (Account 771):		
40-01. U. S. Government taxes	$44,917,704	$33,780,261
40-02. Other than U. S. Government taxes	134,030,780	136,771,483

* Includes payments which will become due on account of principal of long-term debt (other than that in Account 764, Funded debt matured unpaid) within six months after close of month of report.
† Includes obligations which mature not more than two years after date of issue.
‡ Deficit or other reverse items.

NET INCOME OF LARGE STEAM RAILWAYS WITH ANNUAL OPERATING REVENUES ABOVE $25,000,000

Name of railway	Net income after depreciation, For the 3 months of 1936	Net income after depreciation, For the 3 months of 1935	Net income before depreciation, For the 3 months of 1936	Net income before depreciation, For the 3 months of 1935
Alton R. R.	* $419,694	* $413,232	* $338,037	* $332,112
Atchison, Topeka & Santa Fe Ry. System§	* 1,357,059	* 2,286,291	1,478,314	638,442
Atlantic Coast Line R. R.	1,392,008	979,760	1,930,112	1,547,175
Baltimore & Ohio R. R.	* 2,620,430	* 621,708	* 767,687	1,116,164
Boston & Maine R. R.	* 1,910,079	* 534,663	* 1,498,999	* 132,947
Central of Georgia Ry.†	* 688,541	* 737,011	* 495,968	* 541,982
Central R. R. of New Jersey	* 813,856	* 664,621	* 429,800	* 246,591
Chesapeake & Ohio Ry.	9,271,285	7,102,271	11,383,374	9,152,017
Chicago & Eastern Illinois Ry.‡	* 249,095	* 221,471	* 99,423	* 66,750
Chicago & North Western Ry.‡	* 4,753,114	* 3,506,873	* 3,498,849	* 2,230,700
Chicago, Burlington & Quincy R. R.	932,350	* 1,183,093	2,082,248	80,386
Chicago Great Western R. R.‡	* 780,399	* 730,332	* 657,433	* 599,518
Chicago, Milwaukee, St. Paul & Pacific R. R.‡	* 4,338,478	* 5,453,841	* 2,990,726	* 4,044,315
Chicago, Rock Island & Pacific Ry.‡	* 4,511,611	* 4,560,869	* 3,432,983	* 3,449,969
Chicago, St. Paul, Minneapolis & Omaha Ry.	* 1,019,386	* 763,267	* 869,552	* 604,659
Delaware & Hudson R. R.	* 503,610	* 1,020,617	* 222,685	* 773,778
Delaware, Lackawanna & Western R. R.	* 651,915	* 749,578	16,780	* 74,292
Denver & Rio Grande Western R. R.‡	* 1,081,767	* 1,064,097	* 792,504	* 766,318
Elgin, Joliet & Eastern Ry.	312,490	494,980	538,185	717,086
Erie R. R. (including Chicago & Erie R. R.).	* 172,167	* 423,262	802,801	610,754
Grand Trunk Western R. R.	182,950	* 169,434	494,346	98,413
Great Northern Ry.	* 4,128,889	* 4,558,634	* 3,197,341	* 3,666,121
Illinois Central R. R.	* 616,960	* 689,653	1,038,875	1,214,575
Lehigh Valley R. R.	* 692,124	* 639,549	* 115,589	* 40,414
Long Island R. R.	* 502,529	* 735,676	* 205,922	* 446,625
Louisville & Nashville R. R.	1,505,442	701,382	2,551,776	1,756,330
Minneapolis, St. Paul & Sault Ste. Marie Ry.	* 1,913,131	* 2,068,598	* 1,606,159	* 1,794,698
Missouri-Kansas-Texas Lines	* 885,508	* 1,539,913	* 564,262	* 1,211,249
Missouri Pacific R. R.‡	* 3,048,759	* 4,719,407	* 1,996,584	* 3,626,326
New York Central R. R.¶	* 1,041,181	* 1,684,849	3,004,636	2,475,430
New York, Chicago & St. Louis R. R.	475,122	171,293	862,415	578,824
New York, New Haven & Hartford R. R.‡	* 2,512,582	* 1,291,802	* 1,657,705	* 383,508
Norfolk & Western Ry.	7,460,567	4,568,032	8,580,434	5,673,330
Northern Pacific Ry.	* 3,026,386	* 3,539,455	* 2,245,476	* 2,752,889
Pennsylvania R. R.	2,092,054	4,389,588	7,380,914	9,590,981
Pere Marquette Ry.	481,452	361,386	1,116,958	1,006,581
Pittsburgh & Lake Erie R. R.	656,164	670,313	1,107,111	1,097,355
Reading Co.	1,238,660	909,586	2,039,541	1,664,448
St. Louis-San Francisco Ry.‡	* 2,261,874	* 3,341,004	* 1,453,876	* 2,547,822
St. Louis Southwestern Lines‡	* 26,261	* 68,923	125,595	88,256
Seaboard Air Line Ry.†	* 1,588,707	* 1,819,194	* 1,118,747	* 1,358,740
Southern Ry.	* 20[illegible],622	* 1,124,924	602,443	* 420,926
Southern Pacific Transportation System‖	* 1,862,983	* 3,080,150	108,898	* 1,195,600
Texas & Pacific Ry.	238,657	* 146,521	529,855	154,593
Union Pacific R. R.	1,221,030	1,889,711	2,807,578	3,508,427
Wabash Ry.†	* 549,547	* 815,098	* 14,125	* 273,554
Yazoo & Mississippi Valley R. R.	* 257,312	* 780,952	* 130,499	* 631,357

† Report of receiver or receivers.
‡ Report of trustee or trustees.
§ Includes Atchison, Topeka & Santa Fe Ry., Gulf, Colorado & Santa Fe Ry. and Panhandle & Santa Fe Ry.
¶ Includes Boston & Albany, lessor to New York Central R. R.
‖ Includes Southern Pacific Company and Texas & New Orleans R. R. The operation of all separately operated solely controlled affiliated companies, resulted in a net deficit of $1,024,726 for three months of 1936 and $1,047,929 for three months of 1935. These figures are not reflected in this statement.
* Deficit.

1935, although for the first three months of this year their net deficit was less than that for the corresponding period of last year, according to the Interstate Commerce Commission's monthly report of selected income and balance-sheet items. For March, after payment of fixed charges and contingent charges, the roads had a net deficit of $8,316,462, as against a deficit of $4,161,666 in March, 1935. For the three months period the deficit this year was $27,923,134, as compared with $43,359,976 in the corresponding period of last year. For March 61 roads reported a net income while 74 reported deficits. For the three months 53 roads reported net income and 82 had deficits. In the corresponding period of last year only 41 roads reported a net income while 94 had deficits.

A footnote shows that the net income as reported includes charges of $1,452,072 for March, 1936, and $4,296,025 for the three months of 1936 on account of accruals for excise taxes levied under the social security act; also $4,012,619 for March, 1936, and $4,192,631 for three months under the requirements of the tax act which was passed with the railroad retirement act. The net income for March, 1935, included charges of $2,090,373 and that for three months of 1935 included $6,193,694 because of liability under the railroad retirement act of 1934. The commission's compilations are shown in the accompanying tables.

Railroad Enthusiasts

The Railroad Enthusiasts, Inc., will make a trip to Atlantic City, N. J., from New York on Sunday, June 28, on the Blue Comet of the Central of New Jersey. John Thomas, who addressed the Enthusiasts at their last meeting, will be engineer of the train that day. The round-trip fare is $2.75. This trip is in lieu of that scheduled over the Poughkeepsie bridge which has been cancelled.

How to Pack Furniture

The Freight Container Bureau, A.A.R., 30 Vesey Street, New York City, has issued a 12-page bulletin on "Packing of Small Articles of Furniture in Corrugated and Solid Fibreboard Boxes." Small pieces of furniture, such as magazine racks, drop-leaf tables, coffee tables and smoking cabinets, figure largely in bills paid by carriers for damage, because of unskillful or careless packing. The 10 pages of text, going into the subject in the minutest detail, are illustrated by 74 pictures. The 10 pages, however, are well summarized in 10 short paragraphs, describing good practice in this branch of packing.

National Railway Appliances Association

Sixty-five companies have already applied for membership and paid their dues in the National Railway Appliances Association for the coming year, preliminary to the exhibit next March, coincident with the convention of the American Railway Engineering Association and the Signal Section, A.A.R. This is a larger number of members than were signed up on October 1 of last year.

A.S.T.M. to Meet at Atlantic City

The thirty-ninth annual meeting of the American Society for Testing Materials will be held at Chalfonte-Haddon Hall, Atlantic City, N. J., June 29 to July 3. Among the many technical papers and reports on the program, those which promise to be of most interest, directly or indirectly, to the railways, are those on water, corrosion, iron and steel, cement, aggregates, concrete, bituminous waterproofing and roofing materials, and timber.

R. R. Credit Corporation Has Repaid 50 Per Cent

The Railroad Credit Corporation on May 31 made its twenty-eighth liquidating distribution to participating carriers, amounting to $735,881, or one per cent of the contributed fund. Of this amount $394,603 was paid in cash and $341,278 will be credited on carriers' indebtedness to the corporation. This brings the total amount distributed to 50 per cent of the fund or $36,794,036. Of this total $17,517,115 has been returned in cash and $19,276,920 in credits.

Low Fares in East Bringing Passenger Business

While there is general agreement that Eastern railroads, since the June 1 fare reductions, have carried a great many more passengers than in the comparable 1935 period, traffic officers generally remained reluctant to appraise the results after only one week's experience. An exception was the Baltimore & Ohio, which favored the low fares and refused to join in the court test of their validity. This road reported for last week substantial gains in both passengers and revenue as compared with the same week last year; it has put on several extra cars and some sections, while its train-connection motor coaches at New York carried 1,700 more persons than in the same week last year.

The New York Central experienced last week an estimated one per cent increase in passenger revenue as compared with the same period last year. It was pointed out, however, that the situation might have been influenced by travel to the Republican convention at Cleveland, Ohio. Other Eastern roads are unable as yet to comment on the revenue results, but they reported an increase in traffic and inquiries.

Meanwhile, the Long Island was continuing this week to charge three cents

per mile for intrastate tickets. The injunction against that rate which was obtained by the Transit Commission (having regulatory jurisdiction in New York City) was stayed on June 10 pending further hearing on the railroad's appeal. Briefs in the road's three-cent-fare case before the New York Public Service Commission are due June 15.

Appendix to Freight Traffic Report

Co-ordinator Eastman has distributed Appendix III to the Freight Traffic Report of his Section of Transportation Service, which is described in an introductory statement as in effect a marketing atlas and directory of the United States, consisting of 116 trade area maps followed by a market analysis covering thousands of cities (all stations on lines of Class I railroads) arranged according to trade areas. It is stated that the information here displayed has never before been available and that this guide should be of value to industry and transportation alike.

New Haven's "Comet" a Year Old

The New York, New Haven & Hartford's "Comet," streamlined train now making six round trips weekdays between Providence, R. I., and Boston, Mass., celebrated its first birthday on June 5. During its first year the Comet has traveled more than 133,000 miles; it started originally with five round trips each weekday, but beginning last September a sixth round trip was added. On Sundays the train has been used frequently for special excursions which have totaled 12,000 miles. Approximately 100,000 persons have ridden on the Comet.

Pennsylvania Wins Modernization Contest Award

The Pennsylvania has won second place in the Forbes Magazine "$200,000,000 Industrial Modernization Contest," it was announced recently at the prize presentation ceremonies held in New York. First prize, the "Modernization Cup," was awarded to International Business Machines Corporation. The award to the Pennsylvania was based on its program for scrapping 32,000 old freight cars and replacing them by 10,000 new all-steel cars of advanced type, thus providing 11,000,000 man-hours of work for employees in the durable goods industries. Upward of $200,000,000 has been invested in plant modernization programs begun or completed this year by approximately 100 corporations which participated in the contest, it was revealed at the prize presentation ceremonies.

Keeshin Rail-Motor Tariff Suspended

The Interstate Commerce Commission on June 5 suspended from June 8 until September 6 the operation of schedules published in the Keeshin Motor Express Company, Inc., tariff, proposing to establish joint motor-rail-motor rates on freight in trucks, trailers or semi-trailers between points in the states of Delaware, Illinois, Indiana, Iowa, Kentucky, Maryland, Michigan, Missouri, New Jersey, New York, Ohio, Pennsylvania and Wisconsin and the District of Columbia, on the one hand, and points in the states of Iowa, Kansas, Minnesota, Missouri, Nebraska and Wisconsin, on the other hand, in connection with the Chicago Great Western and the Clinton, Davenport & Muscatine to and from various motor truck lines.

The commission will hear oral argument at its offices in Washington on June 17 on the question as to whether the suspension of the tariff schedule involved should be vacated or modified in whole or in part, leaving in effect the order of investigation.

Shippers' Board Meetings

The Trans-Missouri-Kansas Shippers' Board will hold its next meeting at the Broadview Hotel, Wichita, Kansas, on June 17 The program includes an address on Some Practical Aspects of the Soil Conservation Program by H. Umberger, dean of extension service of Kansas State College of Agricultural and Applied Science, and an address on Classification by A. M. Corp, traffic commissioner of the Wichita Chamber of Commerce. At a joint luncheon of the board and the Wichita Board of Trade, the Wichita Chamber of Commerce and the Wichita Traffic Club, Joseph B. Eastman federal co-ordinator of transportation, will be the guest speaker.

The next meeting of the Pacific Northwest Advisory Board will be held in the Chamber of Commerce Auditorium at Yakima, Wash., on June 19. At a joint luncheon of the board and the Lions' Club of Yakima, George C. Manning, assistant vice-president of the Erie, will be the guest speaker.

April Net in Canada Shows Decrease

The Canadian Pacific in April had net operating revenue of $1,337,457, as compared with $1,412,597 earned in April last year. The Canadian National's total was $1,455,306, in contrast to $1,526,995 in April last year.

Canadian National gross for the month and the four months, respectively, was $15,041,771 and $55,321,542, while expenses totaled $13,586,465 for the month and $53,789,494 for the four months. Last year, April revenues were $14,003,423 and expenses $12,476,428. Four months' totals last year were $52,374,159 for revenues and $50,365,465 for expenses. Net operating revenue for the four months was $1,532,048 this year and $2,008,694 in 1935.

Canadian Pacific had gross of $10,580,235 in April this year, $9,986,542 in 1936; and expenses were $9,242,778 this year and $8,573,945 last. For the four months, gross totaled $39,864,228 this year, $36,424,814 last; expenses at $35,699,067 compare with $32,910,521 last year. Four months' net operating revenues, were $4,165,161 this year and $3,514,292 last year.

C. N. R. Gets Streamlined Locomotives

Claimed to be the world's largest, as it is Canada's first streamlined steam locomotive, Number 6400 of the Canadian National was delivered this week to the railway from the shops of the Montreal Locomotive Works. Four other locomotives of the same design are in process of completion and will leave the shops of the builders at intervals of about one week.

These locomotives will be used in fast passenger train service by the C. N. R. between Montreal, Toronto and Sarnia. Running tests will be made after the first of the new locomotives has been placed on exhibition. The builders estimate that the new engines are capable of a speed of 100 miles an hour.

A product of Canada, Locomotive 6400 follows a streamlining plan developed by the National Research Council at Ottawa and officers of the motive power department of the Canadian National. The design was selected after an exhaustive series of wind-tunnel and other tests made with models of the C. N. R.'s 6100 class of locomotives.

Claim Agents to Meet at St. Paul

The Association of Railway Claim Agents will hold its forty-seventh annual convention at the Hotel St. Paul, St. Paul, Minn., on June 17, 18 and 19. The program is as follows:

Wednesday, June 17

Address by Carl R. Gray, Jr., vice-president and general manager of the Chicago, St. Paul, Minneapolis & Omaha
Report of membership committee
Address of president
Reports of standing committees
Reports of special committee
Report of secretary-treasurer
Topics to be discussed:
- The Claim Adjuster, by H. K. Lockwood, trial attorney of the Atchison, Topeka & Santa Fe
- Equitable Handling of Employee Claims, by R. O. Carter, claim agent of the Missouri-Kansas-Texas
- Facts and Probabilities and Appraisement of Cases, by Frank A. Hruska, chief claim agent of the New York Central at Cleveland
- Federal Jurisdiction in Safety Appliance Cases Outside of Interstate Transportation, by Edward C. Craig, general counsel of the Illinois Central

Open Forum

Thursday, June 18

Topics:
- Treatment of Fractures, by Dr. Roscoe C. Webb, chief surgeon of the Great Northern
- Psychology and its Application in Claim Agency, by Dr. Udo Wile, University of Michigan
- Expert Testimony, by Benton S. Oppenheimer, attorney for the New York Central, Baltimore & Ohio and Southern
- Cultivating Friendly Relations Before and After Injury, by J. E. Mathieu, district claim agent of the Chicago & North Western
- Our Association and Its Values, by John S. Douglass, general claim agent of the Gulf, Colorado & Santa Fe

Open Forum

Friday

Closing Business

Equipment on Order

Class I railroads had 18,467 new freight cars on order on May 1, the Association of American Railroads announced. This compared with 1,449 freight cars on order on May 1, 1935, and 15,964 cars on order on May 1, 1934. New steam locomotives on order on May 1 totaled 52, and new electric and Diesel locomotives 25, compared with 1 steam locomotive and 53 electric locomotives on order at the same time a year ago. On May 1, 1934, there were 21 steam locomotives and 107 new electric locomotives on order.

New freight cars placed in service by American railroads from January 1 to April 30 totaled 5,916, compared with 755 cars placed in service in the corresponding period of 1935, and 1,091 cars in the same period of 1934. In the first four months of this year three new steam locomotives were placed in service and three new electric and Diesel locomotives commissioned as against 15 new steam locomotives and 39 new electrics placed in service from January 1 to April 30, 1935. In the same

period of 1934 no steam locomotives were added, but the new electrics placed in service totaled 6.

May Locomotive Shipments

Five steam locomotives were shipped during May by the country's principal manufacturing plants, according to reports received by the Bureau of the Census, U. S. Department of Commerce. In May, 1935, shipments totaled 18 locomotives, including 3 steam, 12 electric and 3 Diesel-electric. These figures do not include statistics on locomotives produced by railroads in their own shops.

Short Lines to Meet at Denver

J. M. Hood, president of the American Short Line Railroad Association, announces that the 22nd annual meeting of the association is to be held at Brown Palace Hotel, Denver, Col., on Monday and Tuesday, August 24 and 25. Besides the regular reports and addresses, there will be a report on per diem and car service and reports by representatives of Regional co-ordinating committees.

On Monday noon members of the association in each of the five Regions, independent of the members in the other Regions, will meet to elect directors and a Regional vice-president for their respective Regions.

Sir Edward Beatty an LL.D. at New York

New York University, at its annual commencement exercises on June 11, conferred upon Sir Edward Beatty, chairman and president of the Canadian Pacific and chancellor of McGill University, the honorary degree of Doctor of Laws. The presentation was made by Dr. William M. Kingsley, of the University Council, and the degree was presented by Chancellor Harry Woodburn Chase in the following words:

Dr. Kingsley: "Edward Wentworth Beatty—Born in Ontario; a graduate of Toronto University; called to the bar in 1901; for thirty-five years associated with the Canadian Pacific Railway, advancing through the legal department from one executive post to another to the headship of that vast organization at the age of forty-one; its president and chairman for the last eighteen years, also chairman of Canadian Pacific Steamship, Ltd., vice-president of Canadian Airways, and officer or director of a dozen other leading commercial establishments; chancellor of McGill University for the last fifteen years, a titular position of the utmost distinction; president of the Canadian Boy Scouts, and officer or director of various other civic and philanthropic organizations; by the grace of George V. King's Counsel for Ontario and the Dominion of Canada, and Knight Grand Cross, Order of the British Empire; man of vision, man of power, man of humble humanity, he is presented for the degree of Doctor of Laws."

Chancellor Chase: "Edward Wentworth Beatty, as one chancellor to another, as, if I may say so, a working chancellor to an honorary chancellor, I welcome you into the honorary alumni of this university. You are the type of citizen whom all of us would like to honor. For your distinguished professional career and more than that, for your rich and varied public service, we confer upon you the degree of Doctor of Laws."

Congressional Adjournment Postponed

Plans for an early adjournment of Congress were abruptly changed last week after the Senate had failed to act as expeditiously as its leaders had hoped for on the revenue bill, and because of delays caused by the death of Speaker Byrns. As a result both the House and the Senate recessed on June 8 until June 15, leaving it uncertain as to how long they would remain in session after that date and as to how many bills might thus be given an opportunity for further consideration.

No action was taken before the recess on the resolution to extend the office of federal co-ordinator of transportation for three more years and Congress will be in session only two more days before the present law expires.

The tax bill, providing for an increase of 3 per cent in the present rates of tax on corporation net incomes and for a 7 per cent tax on the undistributed portion of the net income, was passed by the Senate on June 5 and was sent to conference for reconciliation with the very different bill passed by the House, which provides for much higher rates on undistributed income.

The Senate on June 6 passed Senate Resolution 227, introduced by Senator Wheeler, providing for a continuation during the next Congress of the investigation of railroad financial matters by the committee on interstate commerce which has been carried on during this session under Senate Resolution 77. Senator Wheeler had proposed to have the investigation continued through "succeeding Congresses" with an additional appropriation of $100,000 but the committee had amended the resolution to limit it to the Seventy-fifth Congress and on recommendation of the audit and control committee the amount was reduced to $75,000.

The Senate also on June 6 passed without discussion two bills proposed by the Railway Labor Executives' Association, which the committee on interstate commerce had reported after hearings before a sub-committee, S. 1288, giving the Interstate Commerce Commission greatly increased jurisdiction over signal and safety devices, and S. 2511, giving the commission power to prescribe regulations covering train-dispatching. The bills had been the subject of hearings before sub-committees of the House committee on interstate and foreign commerce without action by the committee.

Fast Trains to Northern Wisconsin and Minnesota

The Chicago, Milwaukee, St. Paul & Pacific and the Chicago & North Western have introduced fast train service to points in northern Wisconsin, supplementary to that offered by the Hiawatha and the "400." On June 5 the Hiawatha began daily operation from Chicago in two sections, the second section leaving the main line at New Lisbon, Wis., and continuing on to Minocqua and Star Lake, Wis., making stops at Wisconsin Rapids, Wausau, Merrill and Tomahawk, and arriving in Minocqua at 9 p. m. and in Star Lake at 10 p. m. Southbound, the train leaves the North Woods in the forenoon and arrives in Chicago in the early evening. On June 26 the Milwaukee will establish a fast sleeping car train, The Fisherman, which will leave Chicago Friday evenings only and will arrive in the North Woods early the next morning. Southbound The Fisherman will leave Star Lake and Minocqua on Sunday nights only, beginning June 28, and will arrive in Chicago each Monday morning. The Chicago & North Western, on June 14, will place the "Minnesota 400," a fast, air conditioned train, in service to provide faster service to the southern part of Minnesota. The train will connect with the "400" at Adams, Wis., leaving at 6:20 p. m. and arriving at Mankato, Minn., at 11:35 p. m. The train will serve Sparta, Wis., Onalaska, Minn., Winona, Rochester, Owatonna, Waseca and Mankato. Returning the train will leave Mankato at 12:30 p. m. connecting with the "400" at 6:15 p. m. This train will cut almost five hours off the present service between Chicago and this portion of Minnesota.

Measures to Permit Both C. P. and C. N. to Build in Northern Quebec

Voting 23 to 4, the members of the Railway Committee of the Legislative Assembly at Quebec City last week reversed its decision of the previous week and decided that the Temiscamingue & Abitibi Railway (a subsidiary of the Canadian Pacific) should be allowed to build a railway from its present terminus at Angliers northward to the mining area at Rouyn, and from there eastward as far as Senneterre on the National Transcontinental section of the Canadian National. This authority, if finally granted, would permit the C.P.R. to invade territory now served by the C.N.R. and by a subsidiary of the Ontario government's line, the Temiskaming & Northern Ontario; furthermore it would permit the C.P.R. to build into a territory east of Rouyn which so far has no railway service, but into which the C.N.R. wishes to build.

In furtherance of the C.N.R.'s plans, legislation was introduced in the House of Commons at Ottawa last week by the Minister of Railways, Hon. C. D. Howe, to extend the present Canadian National branch line in this area from Rouyn eastward to Senneterre, an estimated distance of 99 miles, at an average cost per mile of $60,000 and an estimated total cost of $5,940,000.

It is explained that the Government road had a charter for such a line which expired two years ago. The new line's construction would have the effect of completing a loop into the rich mining country by extending eastward the present line and connecting back to the National Transcontinental at Senneterre. It would traverse an area containing 40 mines, of which 12 are now in actual production and the remainder of which are expected to be producing this summer.

In arguing the C.N.R. position before the Legislative Assembly Committee in Quebec City, Edouard Labelle, trustee, contended that the proposed C.P.R. construction constituted invasion of Canadian National territory on the part of a private company, interested in the welfare of a group of shareholders, as against the interests of all the people who own the Canadian National. One result would be, said Mr. Labelle, that the C.N.R. would lose a million dollars a year at the outset because of this competition, and that the amount soon would be three millions a year, and he complained that the aim of the C.N.R. in opening up the northwestern part of the province would be largely frustrated.

Equipment and Supplies

FREIGHT CARS

THE CHICAGO GREAT WESTERN is inquiring for 100 flat cars of 50 tons' capacity 52 ft. long.

THE INTERNATIONAL RAILWAYS OF CENTRAL AMERICA are inquiring for from 150 to 300 banana cars of 12 tons' capacity, for service in Central America.

THE CORNWALL RAILROAD has ordered 20 hopper ore cars of 70 tons' capacity from the Bethlehem Steel Company. Inquiry for this equipment was reported in the *Railway Age* of February 1.

THE MERCHANTS DESPATCH, INC., has placed orders with the Merchants Despatch Transportation Company for the construction of 500 refrigerator cars. These will be built at the Merchants Despatch Transportation Company's shops in East Rochester, N. Y.

IRON & STEEL

THE MISSOURI PACIFIC has ordered 10,000 tons of 112 lb. rails for use in Missouri, Arkansas and Kansas, from the Colorado Fuel & Iron Company, the Carnegie-Illinois Steel Company and the Inland Steel Company. This is in addition to 17,000 tons ordered in February.

NEW YORK CENTRAL.—Bids are being asked for 6,000 tons of steel to be used on the West Side Improvements of this road between Eighty-second and Ninety-fourth streets in New York City. This is in addition to inquiries for 4,700 tons previously reported for work on the section between 111th and 121st streets.

AIR CONDITIONING

THE NORFOLK & WESTERN will air condition and remodel 42 additional passenger cars in its Roanoke, Va., shops as was reported in the *Railway Age* of May 30, page 897, at a cost of approximately $350,000, the work to start as soon as 25 cars now being air conditioned and remodeled in these shops are completed. Sixteen of these 25 units have already been completed and placed in service. Completion of the new order for air conditioning 42 cars will give the Norfolk & Western a total of 129 air conditioned cars, including 92 coaches, 11 dining cars and 22 Pullman cars. Remodeling will include the construction of arched ceilings, installation of dome lights, laying of rubber tile floors and the repainting of the interior of the cars.

MISCELLANEOUS

THE NEW YORK CENTRAL is asking for bids until 2 p. m., daylight saving time, June 25, at the office of J. W. Pfau, chief engineer, New York, for furnishing, delivering, installing and testing one 60-cycle, 3000 kw. mercury arc rectifier and automatic switchboard apparatus necessary for remote control and changes to the air circuit breaker equipment and control of two manually-operated, 25 cycle, 2500 kw. rotary converters for its Substation No. 6 at Ossining, N. Y. Separate bids will also be received on the same date for furnishing two similar mercury arc rectifiers and automatic switchboard apparatus necessary for remote control, and for the removal and loading on cars of two existing 2500 kw. rotary converters with their transformers, appurtenances, switchboards, wiring, etc., for Substation No. 6A at Harmon, N. Y. On the same date bids will be received until 12 o'clock noon, daylight saving time, by C. C. Warne, purchasing agent, New York, covering steel, wheels, pipe, sheets, bars, shapes, plates, axles, billets, tubes, wire nails, portland cement and condulets.

Supply Trade

The Metallizing Company of America, Inc., Los Angeles, Cal., has opened a new branch office at 407 Call building, San Francisco, under the management of **E. T. Parkinson.**

The Victor Equipment Company, 844 Folsom street, San Francisco, Cal., has been appointed representative of the Railroad Sales division in the San Francisco vicinity for the **Cleveland Tractor Company,** Cleveland, Ohio.

The United States Steel Corporation announces that **J. Carlisle MacDonald** has become associated with its executive personnel as an assistant to **Myron C. Taylor,** chairman of the board, in respect to public relations, with headquarters at New York.

C. T. Bradford, manager of the traffic department of the **International Harvester Company,** Chicago, has been promoted to director of traffic and has been succeeded by **T. J. Maloney. W. N. Armel** has been appointed assistant manager.

The Alfol Insulation Company, Inc., New York, has opened Chicago offices in the Field building, 135 South LaSalle street. **D. D. Grassick** has been appointed district supervisor in charge of the new Chicago headquarters. Mr. Grassick was formerly with the Santa Fe in the mechanical and car construction department for 11 years, and from 1926 to 1931 was railway and industrial sales manager for the Insulite Insulation Company. Since 1932 he has been located at Cleveland as transportation sales representative of the Philip Carey interests.

Walter F. Jerome has been appointed manager of the Electric Railway Sales division of the **White Motor Company,** with headquarters at Cleveland, Ohio. He was born in March, 1894, at New Haven, Conn., and was graduated from New Haven High School and the Connecticut Business University. Commencing his railway career in the mechanical department of the New York, New Haven & Hartford in 1911, Mr. Jerome was promoted a year later to a position in the signal department. He was with the Connecticut Company, a New Haven subsidiary, at New Haven, from 1914 until 1925, when he became assistant to the managing director of the American Electric Railway Association (now the American Transit Association). Since 1929 Mr. Jerome has been assistant to the president of the United Railways & Electric Company, and its successor, the Baltimore Transit Company, Baltimore, Md.

OBITUARY

Robert E. Belknap, at one time sales agent for the Bethlehem Steel Company at Chicago, died in Boston, Mass., on June 4.

W. A. Champieux, superintendent of the Illinois-Southern district for the Oxweld Railroad Service Company, with headquarters at Chicago, died in that city on June 4 of heart failure.

Cyrus H. McCormick, retired chairman of the board of directors of the International Harvester Company, died on June 2 at his home, in Lake Forest, Ill. Mr. McCormick was born in Washington, D. C., on May 16, 1859. He attended Chicago public schools and entered Princeton University as a member of the class of 1879. After college he entered the McCormick Harvesting Machine Company, and in 1884 succeeded to the presidency. In 1902 this company united with others to form the International Harvester Company and Mr. McCormick became its first president, serving until 1918 when he became chairman of its board of directors, from which office he retired in September, 1935. During his service of 33 years as president and chairman of this company, Mr. McCormick pioneered many activities in the organization. Besides his connection with the International Harvester Company, Mr. McCormick had been a director of many companies, including the Chicago & North Western Railway. At the time of his death he was a trustee of Princeton University and of the Field Museum of Natural History. He was awarded the honorary degree of A.M. by Princeton University in 1887, and that of LL.D. by Lafayette College in 1915. During the World War he served as a member of the committee of management of the Y.M.C.A. in Paris.

Construction

CHESAPEAKE & OHIO.—Bids will be received about June 15 for constructing a 500-ton concrete coaling station at Peru, Ind., and retiring frame stations at Peru and Janney. The cost of the work will be about $69,000.

Financial

BURLINGTON TRANSPORTATION COMPANY.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority under the motor carrier act to acquire the property of the Sand Motor Express Company, operating between Davenport, Ia., and St. Louis, Mo., for $15,000.

CHESAPEAKE & OHIO.—*Equipment Trust Certificates.*—This company has awarded, subject to approval of the Interstate Commerce Commission, an issue of $9,500,000 of 2¼ per cent equipment trust certificates to the highest bidders (a syndicate made up of Field, Glore & Co., Cassatt & Co. and White, Weld & Co.), whose bid was 101.201. The syndicate in turn has offered the issue to the public priced to yield from 1.9 per cent to 2.4 per cent, depending upon maturities, which vary from 1937 to 1947.

GREAT NORTHERN.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a segment of line extending from St. John, N. D., to the Canadian border, 3.6 miles; and another segment, Walhalla to the border, 5.3 miles. Abandonment of a 69.5-mile segment of the former line and a 15.2-mile segment of the latter in Manitoba is also contemplated if the Canadian authorities consent.

MAINE CENTRAL.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its lines from Rumford, Maine, to Oquossoc, 36 miles, and from Austin Junction to Kineo, 51 miles.

MARIANNA & BLOUNTSTOWN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Blountstown, Fla., to Scotts Ferry, 14 miles.

MICHIGAN CENTRAL.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon a branch line from Haakwood, Mich., to Afton, 12.75 miles.

MINNEAPOLIS & ST. LOUIS.—*I. C. C. Hearings.*—The Interstate Commerce Commission has announced a series of additional hearings on the application of the Associated Railways for authority to acquire and operate portions of this company's property and to abandon others, to be held before C. E. Boles, assistant director of the commission's Bureau of Finance. The resumed hearings are to be held at Minneapolis, Minn., on June 26 and on succeeding dates at Fort Dodge, Newton, Grinnell, and Spencer, Ia., Albert Lea and St. James, Minn., and Aberdeen, Selby, and Watertown, S. D. Hearings before a sub-committee of the Senate committee on interstate commerce, which has been investigating the plan, were discontinued on May 28 pending consideration of a new plan for reorganization of the company.

MINNESOTA TRANSFER.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $2,000,000 of 3¾ per cent first mortgage bonds, maturing in 1956. The issue, which is provided with a sinking fund, is to be sold to Lazard Freres, Inc., and associated companies at 103.8 (making the cost to the railroad 3.485 per cent) and the proceeds used to redeem outstanding bonds bearing higher interest rates.

The underwriters have made a public offering of the issue at 105.8 to yield approximately 3.35 per cent.

MISSOURI PACIFIC.—*Subsidiary to Reorganize.*—The Boonville, St. Louis & Southern, a subsidiary of this company, has filed a petition in the federal court at St. Louis to reorganize under the federal bankruptcy act. Guy A. Thompson has been named trustee.

MISSOURI PACIFIC.—*Bondholders' Committee Reports.*—The committee for the first and refunding 5 per cent bonds of this company has reported to the holders of these securities its opinion that the debtors' plan of reorganization is "unfair, unsound and entirely unacceptable." The committee objects to the reorganization plan which would leave control by the stockholders "relatively undisturbed." The conclusions follow in part:

1. The property is in good condition. No extraordinary expenses for rehabilitation or improvement are necessary and no new money will be required on reorganization.

2. The committee has no criticism of the operating management under the leadership of L. W. Baldwin. It has been efficient and alert and Missouri Pacific's performance as a railroad, even during the depression, compares favorably with that of other railroads in the territory.

3. Financial management has been unsatisfactory. The major cause of the bankruptcy was a capitalization topheavy with debt. Furthermore, the interests which took control of the railroad in 1930 brought about transactions of doubtful legality which caused great loss, i.e., the purchase of terminals in Kansas City and St. Joseph, Mo., which the court has found to be unlawful and fraudulent, and the purchase of the railroad company's own common and preferred stock, which special counsel to the trustee in bankruptcy has reported to have been illegal.

The committee concludes, therefore, that the problem of reorganization is largely a financial one and that the major result to be attained is the reduction of the capitalization, particularly of the debt, to a safe and reasonable level. This, the committee believes, should be done in accordance with the following principles:

1. The fixed interest debt must be limited to an amount upon which interest will be earned under the most unfavorable conditions reasonably to be expected.

2. The contingent interest debt should be limited to an amount upon which interest can be earned under normal conditions.

3. The preferred stock should be limited to an amount upon which dividends could be paid under conditions slightly above normal.

4. Common stock should be limited to an amount upon which a fair return could be paid in times of prosperity.

NEW YORK, NEW HAVEN & HARTFORD.—*Old Colony Reorganization.*—The federal court in Connecticut has accepted a petition of the Old Colony R.R. to reorganize under the federal bankruptcy act. A hearing will be held June 18.

NEW YORK, NEW HAVEN & HARTFORD.—*Trustees.*—The Interstate Commerce Commission has ratified the appointment of James L. Loomis and Winthrop M. Daniels as trustees.

NORFOLK SOUTHERN.—*Annual Report.*—The 1935 annual report of this company shows net deficit, after interest and other charges, of $421,810, as compared with net deficit of $335,935 in 1934. Selected items from the Income Statement follow:

	1935	1934	Increase or Decrease
RAILWAY OPERATING REVENUES	$4,621,832	$4,763,117	−$141,284
Maintenance of way	865,335	803,186	+62,149
Manitenance of equipment	635,843	594,189	+41,653
Transportation	1,734,663	1,689,044	+45,618
TOTAL OPERATING EXPENSES	3,720,309	3,623,131	+97,178
NET REVENUE FROM OPERATIONS	901,523	1,139,985	−238,462
Railway tax accruals	273,425	314,013	−40,588
Equipment rents	285,921	314,064	+28,142
Joint facility rents	13,837	20,852	+7,015
NET RAILWAY OPERATING INCOME	325,427	489,652	−164,224
Non-operating income	155,562	165,826	−10,263
GROSS INCOME	480,990	655,478	−174,487
Rent for leased roads	83,500	156,197	−72,697
Interest on funded debt	779,984	798,537	−18,553
TOTAL DEDUCTIONS FROM GROSS INCOME	902,800	991,413	−88,612
NET INCOME—DEFICIT	$421,810	$335,935	−$85,875

PEORIA & EASTERN.—*Annual Report.*—The 1935 annual report of this company shows net income, after interest and other charges, of $220,735, as compared with net income of $152,532 in 1934. Selected items from the Income Account follow:

	1935	1934	Increase or Decrease
Average Mileage Operated	211.44	211.44	.....
RAILWAY OPERATING REVENUES	$2,278,716	$2,217,743	+$60,973
TOTAL OPERATING EXPENSES	1,770,214	1,764,443	+5,771
Operating ratio	77.68	79.56	−1.88
NET REVENUE FROM OPERATIONS	508,501	453,300	+55,201
Railway tax accruals	107,597	130,893	−23,295
Railway operating income	400,834	322,394	+78,439
Equipment rents—Net Dr.	135,536	134,317	+1,218
Joint facility rents—Net Dr.	69,618	62,403	−7,214
NET RAILWAY OPERATING INCOME	195,679	125,673	+70,006
Non-operating income	38,472	41,735	−3,263
GROSS INCOME	234,152	167,409	+66,742
TOTAL DEDUCTIONS FROM GROSS INCOME	13,416	14,876	−1,460
NET INCOME	$220,735	$152,532	+68,202

PITTSBURGH & LAKE ERIE.—*Annual Report.*—The 1935 annual report of this company shows net income, after interest and other charges, of $3,245,373, as compared with net income of $2,921,161 in 1934. Selected items from the Income Account follow:

	1935	1934	Increase or Decrease
Average Mileage Operated	233.83	233.68	+0.15
RAILWAY OPERATING REVENUES	$16,945,794	$15,236,943	+$1,708,851

Maintenance of way	1,475,991	1,294,201	+181,789
Maintenance of equipment	5,336,148	5,205,515	+130,632
Transportation	5,591,634	5,208,455	+383,178
TOTAL OPERATING EXPENSES	13,658,184	12,860,601	+797,583
Operating ratio	80.60	84.40	−3.80
NET REVENUE FROM OPERATIONS	3,287,609	2,376,341	+911,268
Railway tax accruals	1,131,719	807,235	+324,484
Railway operating income	2,032,428	1,566,646	+465,781
Equipment rents—Net Cr.	1,727,756	1,766,713	−38,957
Joint facility rents—Net Cr.	2,214	* 28,527	+30,741
NET RAILWAY OPERATING INCOME	3,762,398	3,304,833	+457,565
Non-operating income	406,440	692,436	−285,996
GROSS INCOME	4,168,839	3,997,269	+171,569
Rent for leased roads	91,093	223,865	−132,772
Interest on funded debt	32,422	52,237	−19,814
TOTAL DEDUCTIONS FROM GROSS INCOME	923,465	1,076,107	−152,641
NET INCOME	$3,245,373	$2,921,161	+$324,211

* Debit.

PERE MARQUETTE. — *Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $1,260,000 of 2½ per cent equipment trust certificates.

SOUTHERN PACIFIC.—*Bonds.*—Subject to the approval of the Interstate Commerce Commission, Kuhn, Loeb & Co. has offered $60,000,000 of 3¾ secured bonds of this company, due 1946, at 98¾ to yield 3.9 per cent. The proceeds of the issue, together with treasury funds, will be used to pay bank loans aggregating $16,500,000, indebtedness of $17,000,000 to the Reconstruction Finance Corporation and serial bonds held by the Public Works Administration totaling $12,000,000; and to purchase from the R.F.C. a note of the Cotton Belt for $17,882,250 which is guaranteed by the S. P. The underwriters purchased the issue from the railroad at 97.

TOLEDO, PEORIA & WESTERN.—*Annual Report.*—The 1935 annual report of this company shows net income, after interest and other charges, of $141,172, as compared with net income of $100,447 in 1934. Selected items from the Income Account follow:

	1935	1934	Increase or Decrease
RAILWAY OPERATING REVENUES	$1,841,546	$1,715,624	+$125,922
Maintenance of way	470,303	420,099	+50,204
Maintenance of equipment	133,162	138,560	−5,398
Transportation	482,689	490,555	−7,866
TOTAL OPERATING EXPENSES	1,383,672	1,332,814	−50,858
NET REVENUE FROM OPERATIONS	457,873	382,810	+75,063
Railway tax accruals	60,441	56,371	+4,070
Equipment rents—Net Dr.	194,632	181,296	+13,336
Joint facility rents—Net Cr.	14,231	14,742	−511
NET RAILWAY OPERATING INCOME	216,961	159,765	+57,196
Non-operating income	18,462	15,562	+2,900
GROSS INCOME	235,423	175,327	+60,096
Interest on funded debt	74,755	60,0.0	+14,755
TOTAL DEDUCTIONS FROM GROSS INCOME	94,251	74,880	+19,371
NET INCOME	$141,172	$100,447	+$40,725

WESTERN PACIFIC. — *Annual Report.* — The 1935 annual report of this company shows net deficit, after interest and other charges, of $1,792,725, as compared with net deficit of $1,599,467 in 1934. Selected items from the comparative income statement follow:

	1935	1934	Increase or Decrease
RAILWAY OPERATING REVENUES	$12,907,071	$12,302,903	+$604,168
Maintenance of way	2,369,169	1,898,164	+471,004
Maintenance of equipment	2,147,457	1,906,951	+240,506
Transportation	4,991,322	4,332,185	+659,136
TOTAL OPERATING EXPENSES	10,594,942	9,780,792	+814,149
Operating ratio	82.09	79.50	+2.59
NET REVENUE FROM OPERATIONS	2,312,129	2,522,110	−209,981
Railway tax accruals	678,877	792,348	−113,470
Railway operating income	1,626,175	1,724,340	−98,164
Equipment rents—Net	744,071	608,496	−135,575
Joint facility rents—Net	134,209	151,577	−17,368
Non-operating income	1,890,987	1,876,306	+14,680
GROSS INCOME	3,517,163	3,600,647	−83,483
Rent for leased roads	3,600	3,600	.....
Interest on funded debt	3,301,478	3,318,319	−16,840
TOTAL DEDUCTIONS FROM GROSS INCOME	5,309,888	5,200,114	+109,774
NET DEFICIT	$1,792,725	$1,599,467	−$193,258

WHEELING & LAKE ERIE.—*Readjustment of Capital Structure.*—An application has been filed with the Interstate Commerce Commission for authority for the plan for a readjustment of the company's capital structure proposed by Chairman Jones of the Reconstruction Finance Corporation as outlined in the issue of May 30, page 899.

Average Prices of Stocks and of Bonds

	June 9	Last week	Last year
Average price of 20 representative railway stocks..	47.11	47.24	33.45
Average price of 20 representative railway bonds..	79.71	79.43	74.66

Dividends Declared

Albany & Susquehanna.—$4.50, semi-annually, payable July 1 to holders of record June 15.

Beech Creek.—50c, payable July 1 to holders of record June 20.

St. Louis, Rocky Mountain & Pacific.—25c; Preferred, $1.25, both payable June 30 to holders of record June 15.

Virginian.—$2.50, payable July 1 to holders of record June 19; 6 Per Cent Preferred, $1.50, quarterly, payable August 1 to holders of record July 17.

West Jersey & Seashore.—$1.50, semi-annually, payable July 1 to holders of record June 15.

Railway Officers

EXECUTIVE

C. C. Dearhart, Jr., has been appointed assistant to vice-president in charge of traffic of the Chesapeake & Ohio, with headquarters at Richmond, Va.

W. A. Kingsland, vice-president and general manager in charge of the Central region of the Canadian National, has relinquished the title of general manager and will have the title of vice-president, Central region, with headquarters at Toronto, Ont.

William B. Irwin, staff assistant in the office of the operating vice-president of the Great Northern, has been appointed assistant to the operating vice-president, with headquarters as before at St. Paul, Minn., to succeed **D. J. Kerr,** whose appointment as assistant to the president of the Lehigh Valley was noted in the *Railway Age* of June 6.

A. C. Friedsam has been elected president of the Chicago, West Pullman & Southern and the Illinois Northern, with headquarters at Chicago, to succeed **T. J. Maloney,** president and general manager of both lines, who has retired. At the time of his election to these positions, Mr. Friedsam was serving as auditor of the C. W. P. & S., and as vice-president and auditor of the Illinois Northern.

E. G. Swanson, chief clerk to the vice-president, traffic department, of the Chicago, Burlington & Quincy, whose appointment as assistant to the vice-president was noted in the *Railway Age* of June 6, was born on March 26, 1893. He entered the service of the Burlington in June, 1911, as a clerk in the storehouse at Aurora, Ill.

E. G. Swanson

In 1918 he was assigned to the president's office at Chicago as assistant statistician and during federal control of the railroads during the war he acted as statistician to the federal manager, holding this position from July, 1918, to March, 1920. From April, 1920, to January, 1925, Mr. Swanson held the position of statistician for the

vice-president in charge of traffic. At the end of this period, he was appointed chief clerk to the vice-president in charge of traffic, which position he held until his recent appointment as assistant to the vice-president, effective June 1. Mr. Swanson's office is at Chicago.

Daniel M. Driscoll, superintendent on the Northern Pacific at Missoula, Mont., whose appointment as assistant to operating vice-president, with headquarters at St. Paul, Minn., was noted in the *Railway Age* of May 30, has been connected with this company for nearly 35 years. He was born on February 22, 1878, at Manitowoc, Wis., and received his higher education at the University of Wisconsin. He entered the service of the Northern Pacific on September 20, 1901, as a chainman in the engineering department, later serving successively as a rodman, transitman and construction and locating engineer. In 1910 he was appointed roadmaster, which position he held until 1916, when he was advanced to trainmaster. Three years later Mr. Driscoll was further promoted to assistant superintendent, being advanced to assistant to the general superintendent in

Daniel M. Driscoll

1920. Eight years later he was appointed division superintendent, which position he held at various points until his recent promotion to assistant to the operating vice-president, effective June 1.

Eugene L. Grimm, assistant to the operating vice-president of the Northern Pacific, with headquarters at St. Paul, Minn., who has assumed the duties of general mechanical superintendent, with the same title as before, as noted in the *Railway Age* of May 30, has been in railway service for 32 years. He was born on February 9, 1879, at Indianapolis, Ind., and received his higher education in the school of mechanical engineering of Purdue university, graduating in 1901. He entered railway service in the same year as a special apprentice on the Chicago Great Western, becoming a machinist in June, 1904. Later in the same year Mr. Grimm left this company to go with the Northern Pacific as a draftsman at St. Paul, which position he held until 1907, when he went with the Michigan Central as chief draftsman at Detroit, Mich. Two years later he returned to the Northern Pacific as chief draftsman, which position he held until 1916, when he was appointed mechanical valuation engineer. In 1918 Mr. Grimm was advanced to mechanical engi-

Eugene L. Grimm

neer and in 1923 he was further promoted to assistant to the general mechanical superintendent. Since 1933 his title has been assistant to the operating vice-president.

George E. Schnitzer, assistant freight traffic manager of the Chicago, Rock Island & Pacific, with headquarters at Little Rock, Ark., has resigned to accept a position with the Louisiana & Arkansas as vice-president in charge of traffic, with headquarters at Shreveport, La. **B. S. Atkinson,** senior vice-president of the L. & A., with headquarters at Shreveport, has been assigned executive duties. Mr. Schnitzer first entered railway service as a clerk in the local freight office of the Chicago, Burlington & Quincy at St. Louis, Mo., later serving as assistant to the superintendent of warehouses and chief claim clerk. Subsequently he went with the Wabash as superintendent of warehouses at St. Louis, and in 1909 he became connected with the joint commercial office of the Chicago, Rock Island & Pacific and the St. Louis-San Francisco at St. Louis. On January 1, 1910, when the traffic departments of these two roads were separated, he was appointed chief clerk to the

George E. Schnitzer

general agent of the Rock Island at St. Louis, being appointed chief clerk in the general freight department at Little Rock on January 1, 1912. On April 1, 1917, Mr. Schnitzer was further advanced to assistant general freight agent at Little Rock and after five years in this position he was appointed general freight agent, with the same headquarters. Since April 1, 1932, he has occupied the position of assistant freight traffic manager at that point. His appointment as vice-president of the L. & A. became effective on June 1.

Duncan J. Kerr, whose appointment as assistant to the president of the Lehigh Valley at New York was noted in the *Railway Age* of June 6, was born on December 3, 1883, at Glasgow, Scotland. Mr. Kerr was graduated from the University of Glasgow in 1904 with Bachelor of Science and Civil Engineering degrees. He entered railway service in November, 1904, with the Pennsylvania and in 1909 went with the Chicago, Milwaukee & Puget Sound (now Chicago, Milwaukee, St. Paul & Pacific). From 1910 to 1913 Mr. Kerr served with the Oregon Trunk and the Spokane, Portland & Seattle. He entered the service of the Great Northern in 1913 and subsequently became office engineer, corporate engineer and assistant to vice-president in the executive department. On

Duncan J. Kerr

December 1, 1920, Mr. Kerr was appointed assistant to vice-president in charge of operation, Great Northern, which position he held until his recent appointment as assistant to the president of the Lehigh Valley. Mr. Kerr also served as president of the Cottonwood Coal Company and the Somers Lumber Company, subsidiaries of the Great Northern, from 1927 to May, 1936.

FINANCIAL, LEGAL AND ACCOUNTING

P. J. Stock, assistant secretary of the Minneapolis, St. Paul & Sault Ste. Marie, was elected secretary at the adjourned annual meeting of the board of directors on May 19. Mr. Stock's office is at Minneapolis, Minn.

Walter G. Macdowell, chief clerk to the statistician of the Norfolk & Western, has been appointed statistician, with headquarters at Roanoke, Va., succeeding **W. B. Moss,** who has retired after 50 years of service with this road.

F. E. Godfrey and **G. R. Wilson** have each been appointed assistant to the treas-

urer of the Pennsylvania. The former has been acting as chief clerk to the treasurer and the latter has been office manager.

John Pemberton, Jr., assistant to the treasurer of the Pennsylvania, has been appointed assistant treasurer. It was reported erroneously in the *Railway Age* of June 6 that Mr. Pemberton had been appointed treasurer.

Thomas H. Simpson, assistant treasurer of the Missouri-Kansas-Texas, whose election as treasurer was noted in the *Railway Age* of May 30, has been connected with this company for nearly 41 years. A native of Perryville, Mo., Mr. Simpson entered the service of the Katy on August 8, 1895, as a clerk in the treasury department at St. Louis, Mo. On October 1, 1900, he was advanced to cashier in the treasurer's office at Dallas, Tex., returning to St. Louis three years later as cashier in the treasurer's office at that point. In 1907 he was further advanced to treasurer of the Kansas company at Parsons, Kan., which position he held until April, 1923, when he returned to St. Louis

Thomas H. Simpson

as assistant treasurer. He remained in this capacity until his recent election as treasurer.

OPERATING

A. J. Chester, superintendent of the Fort Worth division of the Texas & Pacific, with headquarters at Fort Worth, Tex., has been appointed general superintendent at Dallas, Tex. **L. L. Oliver,** trainmaster at Fort Worth, has been appointed superintendent of the Fort Worth division, succeeding Mr. Chester.

T. C. Davis, general yardmaster on the Chesapeake & Ohio, with headquarters at Fulton, Richmond, Va., has been appointed terminal trainmaster, with jurisdiction over the Richmond terminal, with headquarters, as before, at Fulton, succeeding **E. L. Smith,** deceased. The office of general yardmaster has been abolished.

E. A. Whitman, chief engineer of the Minneapolis, St. Paul & Sault Ste. Marie and the Duluth, South Shore & Atlantic, with headquarters at Minneapolis, Minn., has been appointed acting general manager of the Soo Line and has been elected vice-president of the D., S. S. & A., with the same headquarters. In both capacities Mr. Whitman succeeds **A. E. Wallace,** vice-president and general manager of the Soo Line and vice-president of the D., S. S. & A., whose death, on June 3, was reported in the *Railway Age* of June 6.

John Henry Lerbs, whose appointment as superintendent of the Morris and Es-

Hornbaker

John Henry Lerbs

sex division of the Delaware, Lackawanna & Western was noted in the *Railway Age* of June 6, entered the service of the Lackawanna in 1902 as brakeman. In 1907 he was advanced to trainman and in 1914 became drill conductor and five years later, night yardmaster, at Port Morris, N. J. He was advanced to general yardmaster at Hoboken, N. J., in May, 1920, and was promoted to freight trainmaster at Hoboken on August 1, 1925. Mr. Lerbs was appointed terminal trainmaster at Hoboken on April 1, 1930, and was transferred to the Scranton division as trainmaster on January 16, 1935, which position he held until his recent appointment as superintendent of the Morris and Essex division.

Henry J. Mullaghy, whose appointment as assistant to general superintendent of the Delaware, Lackawanna & Western at Scranton, Pa., was noted in the *Railway*

Henry J. Mullaghy

Age of June 6, was born at Nanticoke, Pa., on December 18, 1870. Mr. Mullaghy, who had previously been employed in coal mining work, entered railroad service in 1891, when he became brakeman on D., L. & W. coal trains. Later he served as yardmaster and then as general yardmaster at Binghamton, N. Y., and at Scranton. Mr. Mullaghy was promoted to trainmaster in 1913, which position he held at Binghamton and at Scranton until July, 1923, when he was promoted to division superintendent at Scranton.

Robert M. White, whose appointment as assistant to general superintendent of the Delaware, Lackawanna & Western, with headquarters at Hoboken, N. J., was announced in the *Railway Age* of June 6, entered railroad service as chainman in the maintenance of way department, Susquehanna division of the Erie at Elmira, N. Y., in 1894 and lated served as assistant engineer and supervisor. He left the Erie in 1900 and became assistant engineer for the Mexican Coal & Coke Company. Mr. White entered the service of the Lackawanna in 1901 as assistant engineer on the Buffalo division at Dansville, N. Y., and was promoted to resident engineer and roadmaster at Buffalo the same year. On September 1, 1908, he was promoted to division engineer of the Scran-

Robert M. White

ton division at Scranton and on September 16, 1911, became superintendent of the Bangor and Portland division, with headquarters at Easton, Pa. He continued in that position until October, 1917, when he was granted a furlough to serve in the World War and was assigned to the construction division of the Army. In August, 1919, Mr. White returned to the Lackawanna as superintendent of the Bangor and Portland division and on March 1, 1920, was promoted to superintendent of the Morris and Essex division.

F. L. C. Bond, general superintendent of the Montreal district of the Canadian National, has been appointed general manager, Central region, with headquarters at Toronto. **T. C. Hudson,** general superintendent in charge of the Southern Ontario district, has been appointed general superintendent, Montreal district, succeeding Mr. Bond. **J. F. Pringle,** general superintendent of transportation, has been appointed general superintendent, Southern Ontario district, succeeding Mr. Hudson. Mr. Bond was born at Montreal and was graduated from McGill University, Montreal, in 1898, with a Bachelor of Science

degree. He entered the service of the Grand Trunk in 1898 as assistant to the resident engineer, Eastern division. In 1901 he was appointed engineer in charge of double track construction. From January to March, 1902, he was night superintendent on construction of the Park Ave-

F. L. C. Bond

nue tunnel of the New York subway system, returning to the Grand Trunk in April of that year. He was then appointed resident engineer, Eastern division, in which position he remained until 1913, when he became division engineer, Eastern lines. After service in the World War, Mr. Bond returned to the Grand Trunk as chief engineer, and following amalgamation of the lines comprising the Canadian National he was appointed regional chief engineer, Central region, with headquarters at Toronto. He held this position until April, 1924, when he was appointed general superintendent, Montreal district.

William W. Judson, whose appointment as superintendent of the Yellowstone division of the Northern Pacific, with headquarters at Glendive, Mont., was noted in the May 30 issue of the *Railway Age,* was born on March 24, 1891, at Rochelle, Ill., and received his higher education at

William W. Judson

Knox college, Galesburg, Ill., and Dartmouth college, Hanover, N. H. Mr. Judson first entered railway service in 1911, in the engineering department of the Spokane, Portland & Seattle, leaving this company in 1914 to go with the Northern Pacific, where he served as a rodman, instrumentman and assistant engineer in the engineering department at Centralia, Wash., until 1917. In that year Mr. Judson joined the United States Army, becoming a first lieutenant in the transportation corps and serving in France for 15 months. In 1919 he returned to the service of the Northern Pacific, serving as an assistant engineer on maintenance and construction work until 1927, when he was assigned to the position of special assistant to the operating vice-president at St. Paul, Minn. Two years later he was made trainmaster on the Pasco division at Pasco, Wash., later being transferred successively to the Idaho division at Spokane, Wash., and to the Tacoma division at Seattle, Wash. In 1933 he was advanced to assistant to the general manager, with headquarters at Seattle, which position he was holding at the time of his recent appointment, effective June 1, as superintendent of the Yellowstone division.

L. P. Bergman, who has been appointed general manager of the Mid-West department of the Railway Express Agency, Inc., was born on May 12, 1885, at Kan-

L. P. Bergman

sas City, Mo. Mr. Bergman entered the service of Wells, Fargo & Company on July 16, 1900, continuing with the enlarged concern when this company was consolidated with others in 1918, to form the American Railway Express Company, which became the Railway Express Agency, Inc., in 1929. Mr. Bergman served in various clerical positions at Kansas City, Mo., Oklahoma City, Okla., Seattle, Wash., Sacramento, Cal., Salt Lake City, Utah, and San Francisco, Cal., until June 1, 1917, when he was appointed assistant superintendent of the Alaska-Yukon division at Seattle. On July 1, 1918, he was advanced to superintendent of the Montana division at Great Falls, Mont., later being transferred to the Arizona-New Mexico division at El Paso, Tex., and to the Los Angeles division at Los Angeles, Cal. On March 1, 1934, he was further promoted to superintendent of transportation and traffic, with headquarters at San Francisco, being made assistant to the vice-president, with the same headquarters, on June 1, 1935. He was holding the latter position at the time of his recent appointment as general manager at Kansas City, which was effective on June 1.

TRAFFIC

F. G. Greene has been appointed traffic manager of the Utah Railway Company, with headquarters at Salt Lake City, Utah.

Harry F. Klocker, assistant general freight agent of the Missouri-Kansas-Texas, with headquarters at St. Louis, Mo., has resigned to become assistant traffic manager of the Monsanto Chemical Company.

W. E. Callender, assistant passenger traffic manager of the Chicago & Eastern Illinois, effective June 1, was appointed to the newly-created position of assistant general traffic manager, with headquarters as before at Chicago. The position of assistant passenger traffic manager has been abolished.

W. P. Hawley, general eastern traffic representative of the Minneapolis & St. Louis, effective June 1, was appointed executive representative, with headquarters as before at New York.

James W. Hill, whose appointment as general freight agent of the Chicago, Rock Island & Pacific at Chicago was announced in the *Railway Age* of June 6, has been connected with this company for 26 years. He was born on January 22, 1895, at Orient, Iowa, and entered railway service with the Rock Island in May, 1910, as a station clerk at Moline, Ill. During the next 7 years Mr. Hill served in this position and as telegraph operator and agent at various points. He then enlisted in the Signal Corps of the United States Army and remained in the service until July 1, 1919. After his discharge from the army he returned to the Rock Island as agent at the shops at Silvis, Ill., being transferred to the Eighty-third Street freight house at Chicago on October 1, 1919. In April, 1920, Mr. Hill was sent to Detroit, Mich., as traveling freight agent, being advanced to assistant general agent at that point in the following month. From July

James W. Hill

1, 1923, until his recent appointment, which was effective on June 1, he served as general agent at Detroit.

George Gilman, whose appointment as assistant passenger traffic manager of the Atchison, Topeka & Santa Fe, with head-

quarters at Chicago, was reported in the *Railway Age* of June 6, has been in railroad service for 32 years, 21 of which have been with the Santa Fe. Born on November 21, 1883, at La Harpe, Ill., Mr. Gilman studied law at the Chicago Kent College of Law and was admitted to the bar in 1921. He entered railway service in April, 1904, with the Toledo, Peoria & Western at La Harpe, later being transferred to Peoria, Ill., where he served in the local freight office as a clerk. In May, 1906, he entered the service of the Chicago, Burlington & Quincy as a clerk in the supply department at Galesburg, Ill., later being appointed lumber clerk at St. Joseph, Mo., and serving in the same position at Chicago. In 1909 he entered the service of the Chicago, Rock Island & Pacific, as a passenger rate clerk, leaving this company in 1911, to go with the Atchison, Topeka & Santa Fe as chief clerk in the passenger department at Amarillo, Tex. On March 16, 1917, he was appointed rate clerk in the office of the passenger traffic manager at Chicago, being advanced to chief rate clerk in April, 1918. In September of the same year he was further promoted to chief clerk, which position he held until his recent appointment as assistant passenger traffic manager.

Root

George Gilman

ENGINEERING AND SIGNALING

Effective June 1 **A. L. Becker,** architect for the Gulf Coast Lines and the International-Great Northern, with headquarters at Houston, Tex., has been appointed architect for the Missouri Pacific Lines, of which the former roads are constituents.

J. W. Knapp, assistant division engineer of the Russell division of the Chesapeake & Ohio, with headquarters at Russell, Ky., has been promoted to division engineer of the Richmond division, with headquarters at Richmond, Va., succeeding **A. W. White,** who has been promoted to the newly-created position of engineer of track, with headquarters at Richmond, and jurisdiction over the entire system, reporting to the engineer maintenance of way. **L. T. Nuckols,** assistant division engineer of the Ashland division, with headquarters at Ashland, Ky., has been promoted to division engineer of the Ashland division, with headquarters, as before, at Ashland, succeeding **R. W. Mumford,** who has been transferred to the Huntington division, with headquarters at Huntington, W. Va., to succeed **M. I. Dunn,** whose promotion to trainmaster was announced in the *Railway Age* of June 6.

MECHANICAL

E. R. Manor, assistant to the general mechanical superintendent of the Northern Pacific, with headquarters at St. Paul, Minn., has had his title changed to general mechanical assistant.

W. E. Beck has been appointed road foreman of engines of the Mahoning division of the Erie, with headquarters at Cleveland, Ohio, succeeding **J. J. McNeill,** retired.

Effective June 15 **M. B. McPartland,** superintendent of motive power of the Western Pacific, with headquarters at Sacramento, Cal., has been appointed general superintendent of motive power of the Chicago, Rock Island & Pacific, with headquarters at Chicago, Ill., succeeding **P. J. Colligan,** retired.

D. J. Sheehan, mechanical assistant to the president of the Chicago & Eastern Illinois, whose appointment as superintendent motive power, with headquarters, as before, at Danville, Ill., was noted in the *Railway Age* of June 6, is a native of Northampton, Mass., and was graduated in mechanical engineering from the University of Michigan in 1920. From the time of his graduation until 1923 he served as an instructor in the mechanical engineering department of Purdue University. He then became connected with the Lima Locomotive Works, Lima, Ohio, in the engineering department, where he remained until 1928, when he entered the service of the Erie as special engineer to the mechanical assistant to the president. In July 1929, he was appointed to the same position on the Chesapeake & Ohio, and in 1932 he was appointed engineer of motive power of the Advisory Mechanical committee of the Chesapeake & Ohio, the Erie, the New York, Chicago & St. Louis and the Pere Marquette, with headquarters at Cleveland, Ohio. Later in the same year Mr. Sheehan accepted a position with the C. & E. I. as mechanical assistant to the president, with headquarters at Danville, Ill., which position he was holding at the time of his recent appointment as superintendent of motive power, effective June 1.

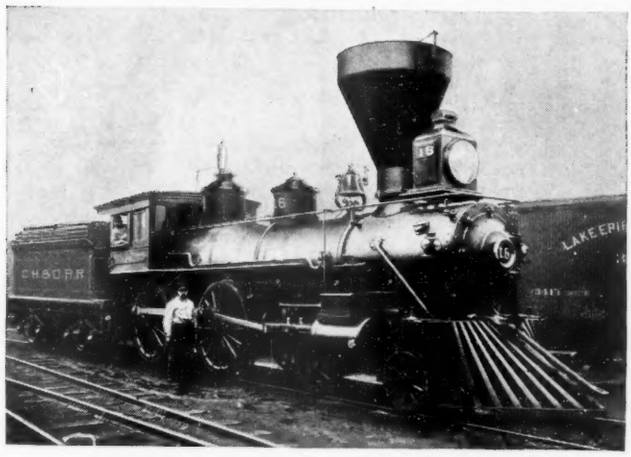
D. J. Sheehan

Eugene H. Roy, whose appointment as general superintendent motive power for the Seaboard Air Line, with headquarters at Norfolk, Va., was noted in the *Railway Age* of May 23, was born on August 14, 1883, at Winooski, Vt. Mr. Roy entered railway service in November, 1905, as machinist for the Boston & Maine at Worcester, Mass., and the following year went with the Florida East Coast, serving in the same capacity at St. Augustine, Fla. In August, 1907, he became machinist for the Seaboard Air Line at Jacksonville, Fla., serving successively with that road as night roundhouse foreman at Jacksonville, general foreman at Tampa, Fla., and roundhouse foreman at Raleigh, N. C., and at Portsmouth, Va. From May, 1918, to June, 1919, he was in charge of machinists in the United States Navy Yard at Portsmouth. In October, 1919, he became roundhouse foreman for the Virginian at Elmore, W. Va., and from April to August, 1920, he was leading machinist and salesman for the Union Iron Works at Berkley, Va. In August, 1920, he reentered the service of the Seaboard Air Line as machinist at Portsmouth, then becoming general foreman in the locomotive department at Portsmouth. In April, 1922, he became master mechanic at Savannah and in February, 1927, general master mechanic, Western district, Seaboard Air Line. On March 1, 1928, he became master mechanic, which position he held successively on the Alabama division, the Alabama and East Carolina division and the South Carolina division. On September 6, 1929, Mr. Roy was appointed superintendent motive power at Savannah and on April 1, 1931, he was promoted to assistant general superintendent motive power, which position he held until his recent appointment as general superintendent motive power.

Eugene H. Roy

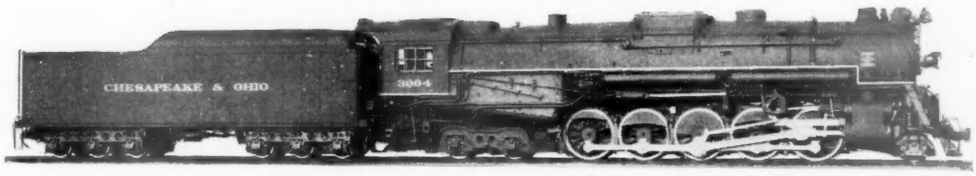
P. J. Colligan, general superintendent of motive power of the Chicago, Rock Island & Pacific, who has relinquished the

Continued on next left-hand page

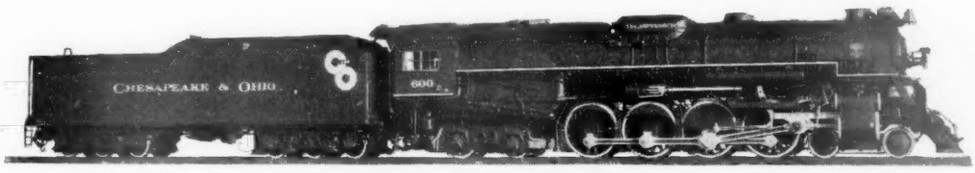


MOTIVE POWER DEVELOPMENT on the C. & O.

Just one generation ago wood burning 4-4-0 type locomotives like that shown above were hauling thru fast trains over lines now part of the C. & O. At that time this power was the foremost of locomotive developments.



Continuously maintaining its position among the leaders in locomotive progress, the C. & O. in 1930 placed in service the large freight power shown above.



The latest additions to its modern equipment are the Greenbrier Type locomotives which the C. & O. placed in service in January of this year. In results obtained in improved operating efficiency and economy, this new power reflects the ability and progressive foresight of the management.

LIMA LOCOMOTIVE WORKS INCORPORATED, LIMA, OHIO

LIMA LOCOMOTIVE WORKS INCORPORATED

responsibilities of this position, as reported in the *Railway Age* of June 6, was born on January 24, 1868, at Rock Island, Ill. He first entered railway service with the Rock Island in 1886 as a call boy, later becoming a machinist apprentice. On finishing his apprenticeship in 1890, Mr. Colligan went with the Chicago, Milwaukee, St. Paul & Pacific as a machinist at Savanna, Ill., returning to the Rock Island as a machinist at Horton, Kan., in 1892. He left this company in 1894 to go with the Missouri-Kansas-Texas in the same capacity, subsequently being promoted to general foreman. In 1899 Mr. Colligan returned to the Rock Island as a machinist

P. J. Colligan

at Davenport, Iowa, being appointed an enginehouse foreman in the following year, which position he held at various points. In 1904 he became connected with the Illinois Central as a general foreman, later being advanced to master mechanic at Clinton, Ill. In 1905 he again returned to the Rock Island as machine shop and gang foreman at Silvis, Ill., being sent to Chickasha, Okla., as general foreman in 1906. In 1907 he was appointed assistant master mechanic at Ft. Worth, Tex., and 2 years later he was advanced to master mechanic at Dalhart, Tex., being transferred to Chicago in 1914. In 1923 he was promoted to superintendent of motive power at El Reno, Okla., and in 1925 he was assigned to the position of superintendent of the shops at Silvis. On March 1, 1932, Mr. Colligan was advanced to superintendent of motive power at Kansas City, Mo., and on October 1 of the same year he was made general superintendent of motive power at Chicago.

PURCHASES AND STORES

Hal D. Foster, purchasing agent of the Colorado & Southern, with headquarters at Denver, Colo., has been appointed also purchasing agent of the Burlington-Rock Island.

SPECIAL

Earl E. Thompson, assistant superintendent of telegraph of the Great Northern, with headquarters at Spokane, Wash., has been appointed general safety supervisor, with headquarters at St. Paul, Minn., to succeed **C. L. LaFountaine,** transferred.

Dr. George P. Myers, company surgeon for the New York Central, with headquarters at Detroit, Mich., has been appointed acting medical director, New York Central System, except the Boston & Albany, with the same headquarters, succeeding **Dr. W. L. Hartman,** deceased.

OBITUARY

Dr. William Louis Hartman, medical director, New York Central System, with headquarters at Detroit, Mich., died suddenly on June 1. He was 70 years old.

H. S. Prentiss Nichols, who retired on December 1, 1928, as assistant general counsel of the Pennsylvania, died on June 7 at his home at Ventnor, N. J. He was 77 years old.

Colonel E. H. R. Green, financier and former superintendent and managing director of the Ohio & Mississippi (now part of the Baltimore & Ohio) and president of the Texas & Midland, which was later absorbed by the Southern Pacific System, died on June 8 at Lake Placid, N. Y., after an illness of several months. Colonel Green was 67 years old.

Leon M. Allen, passenger traffic manager of the Chicago, Rock Island & Pacific, whose death on May 26 was announced in the *Railway Age* of May 30, had been connected with the Rock Island continuously for 55 years. He was born on July 4, 1863, at Davenport, Iowa, and first entered railway service with the Rock Island on July 1, 1881. He served as a yard clerk and assistant cashier in the local freight office at Davenport until September, 1882. In February of the following year he was appointed assistant ticket agent, holding this position until October, 1888, when he was advanced to general

Leon M. Allen

agent at Davenport. In December, 1898, Mr. Allen was sent to Chicago as assistant general passenger agent and in October, 1901, he was further promoted to first assistant general passenger agent, with the same headquarters. In August, 1902, he was advanced to general passenger agent, holding this position until December, 1909, when he was made passenger traffic manager, with headquarters at Chicago. He was elected also vice-president in March, 1920, which title he retained in addition to that of passenger traffic manager until the appointment of trustees for the Rock Island in 1933. Mr. Allen was president of the American Association of Passenger Traffic Officers, 1928-29.

Austin E. Wallace, vice-president and general manager of the Minneapolis, St. Paul & Sault Ste. Marie and vice-president of the Duluth, South Shore & Atlantic, whose death on June 3 was announced in the *Railway Age* of June 6, was born on March 2, 1879, at Nashua,

Austin E. Wallace

N. H. He was educated at Harvard University and entered railway service in 1902, as a clerk and timekeeper on the Great Northern, leaving this company in 1904, to go with the Chicago, Rock Island & Pacific, where he served as a timekeeper and in various clerical capacities. In 1907 Mr. Wallace entered the service of the Chicago, Burlington & Quincy, where he served successively as a special inspector, assistant extra gang foreman, assistant roadmaster, assistant trainmaster and trainmaster. In 1911 he was assigned to the staff of the vice-president and later was appointed assistant superintendent. He was acting in the latter capacity in 1912, when he left this company to return to the Rock Island as division superintendent, which position he held until 1918. In that year Mr. Wallace became connected with the Erie as general superintendent at Chicago, being appointed assistant general superintendent at Youngstown, Ohio, later in the same year. Two years later he was made manager of the Chicago region of the Erie, holding this position until 1922, when he became vice-president and general manager of the Soo Line. In 1923 he was given the additional title of vice-president of the Duluth, South Shore & Atlantic.

THE ELECTRO-MOTIVE CORPORATION will construct a 44-ft. by 240-ft. addition to its manufacturing plant at LaGrange, Ill., for the storing of steel to be used in the construction of locomotives.

Tables of Revenues and Expenses of Railways begin on next left-hand page

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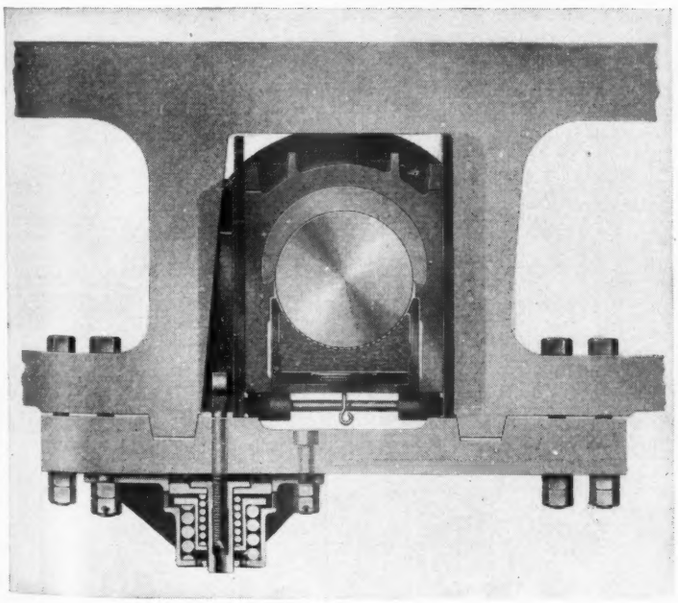

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FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1936

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr.& retir. 1936	After depr.& retir. 1935	Before depr.& ret.
Akron, Canton & Youngstown	April	171	$173,464	$50	$183,426	$27,333	$17,944	$8,761	$52,974	$116,413	63.5	$67,013	$54,312	$36,137	$22,472	$40,589
	4 mos.	171	680,925	214	731,167	106,795	66,653	32,700	209,985	453,155	62.0	278,012	232,257	159,420	153,763	177,304
Alton	April	956	921,081	151,270	1,251,189	163,021	221,872	45,402	490,779	981,340	78.4	269,849	178,897	2,777	—54,105	29,990
	4 mos.	956	3,622,422	658,285	4,963,875	545,195	917,712	179,619	2,038,827	3,934,096	79.3	1,029,779	692,201	13,523	—36,629	122,393
Atchison, Topeka & Santa Fe System	April	13,234	9,686,082	1,094,037	11,824,410	2,022,563	2,858,242	422,535	4,315,073	10,055,000	85.0	1,769,410	632,024	732,135	819,555	1,677,449
	4 mos.	13,234	36,239,609	4,548,180	44,788,376	6,757,447	11,302,618	1,642,316	17,042,182	38,542,515	86.1	6,245,861	2,101,462	2,087,018	1,186,486	5,867,705
Atlanta & West Point	April	93	93,015	19,687	137,600	13,827	28,261	8,178	57,570	118,176	85.9	19,424	12,588	—321	—2,288	4,041
	4 mos.	93	379,865	86,801	557,189	70,730	111,782	32,287	237,370	490,877	88.1	66,312	37,890	—11,180	—26,876	26,611
Western of Alabama	April	133	89,050	19,629	124,902	16,753	31,009	7,014	49,389	112,659	90.2	12,243	3,645	6,964	—7,468	15,827
	4 mos.	133	345,277	88,544	494,689	79,146	124,220	28,232	205,237	469,659	94.9	25,030	—9,665	5,292	—39,002	60,720
Atlanta, Birmingham & Coast	April	639	222,027	19,091	272,688	42,828	49,942	21,948	108,821	246,849	90.5	25,839	18,238	1,203	—9,615	12,818
	4 mos.	639	885,217	107,627	1,118,296	169,903	199,351	87,476	443,022	997,381	89.2	120,915	65,797	—7,682	—66,711	40,969
Atlantic Coast Line	April	5,145	2,899,149	658,192	4,042,656	391,628	641,114	128,345	1,516,518	2,861,187	70.8	1,181,469	656,469	468,177	347,777	644,819
	4 mos.	5,145	11,201,935	3,436,544	16,606,581	1,661,839	2,744,601	544,223	6,240,565	11,995,800	72.2	4,610,781	2,610,781	2,052,001	1,745,986	2,766,747
Charleston & Western Carolina	April	342	180,856	1,137	187,536	26,741	30,787	6,550	63,641	132,923	70.9	54,613	36,613	33,430	52,369	39,734
	4 mos.	342	710,669	4,422	735,062	104,795	111,313	25,588	246,936	508,003	69.1	227,059	156,059	145,474	162,502	170,690
Baltimore & Ohio	April	6,486	11,862,246	855,653	13,568,619	1,037,392	3,193,936	384,442	4,480,698	9,783,682	72.1	3,784,937	2,914,539	2,636,471	979,873	3,246,951
	4 mos.	6,486	44,514,522	3,260,292	50,842,024	4,021,901	12,481,148	1,465,531	18,606,260	39,249,701	77.2	11,592,323	8,447,988	7,163,399	7,276,371	9,626,622
Staten Island Rapid Transit	April	23	53,680	77,122	138,351	11,648	21,349	1,810	86,454	133,778	96.7	4,573	—18,227	—33,221	—43,859	—25,803
	4 mos.	23	205,766	305,495	538,335	50,489	84,544	6,781	354,767	546,613	101.5	—8,278	—88,828	—153,656	—195,637	—124,002
Bangor & Aroostook	April	603	545,909	17,379	585,505	95,107	94,549	5,136	138,076	357,819	61.1	227,686	166,879	163,059	215,675	185,150
	4 mos.	603	2,434,764	95,834	2,614,186	399,912	373,381	19,119	646,997	1,533,809	58.7	1,080,377	816,693	756,415	1,009,565	844,816
Bessemer & Lake Erie	April	225	964,782	5,428	983,862	172,561	283,116	11,883	166,618	672,295	68.3	311,567	261,029	308,644	52,681	362,511
	4 mos.	225	2,451,707	13,868	2,514,814	397,331	1,116,165	44,956	601,690	2,313,977	92.	200,837	60,542	306,182	—14,417	522,213
Boston & Maine	April	1,997	2,876,253	456,411	3,822,854	889,686	592,356	63,882	1,593,231	3,324,497	87.0	498,357	197,698	—7,546	631,830	129,267
	4 mos.	1,997	10,476,639	2,140,956	14,516,442	2,909,042	2,651,741	243,931	6,415,170	12,969,252	89.3	1,547,190	500,097	—317,121	1,680,104	230,772
Brooklyn Eastern District Terminal	April	10.75	101,838	.....	104,249	3,952	9,032	634	29,108	50,114	48.1	54,135	47,770	47,770	34,910	.....
	4 mos.	10.75	396,367	.....	405,585	15,408	29,483	1,494	116,967	188,798	46.6	216,787	182,825	183,698	122,424	.....
Burlington, Rock Island	April	255	54,565	3,533	64,740	12,593	11,812	3,716	38,040	73,878	114.1	—9,138	—16,521	—25,126	—21,674	—23,150
	4 mos.	255	228,000	16,548	226,012	54,144	52,299	15,557	151,819	303,749	114.2	—37,737	—65,240	—102,665	—109,298	—93,732
Cambria & Indiana	April	37	86,923	.....	87,096	7,338	120,621	409	11,399	145,551	167.11	—58,455	—66,131	3,622	40,961	19,421
	4 mos.	37	417,706	.....	418,357	25,588	233,233	1,501	54,215	336,863	80.52	81,494	628	281,474	334,655	344,905
Canadian Pacific Lines in Maine	April	233	165,062	13,285	191,017	31,927	43,549	9,445	77,237	169,242	88.6	21,775	12,291	—8,297	22,542	—6,228
	4 mos.	233	871,568	54,400	971,694	132,581	212,394	38,617	375,680	789,026	81.2	182,668	147,506	57,523	69,094	65,738
Canadian Pacific Lines in Vermont	April	85	65,563	5,735	82,078	21,889	29,485	4,198	59,451	120,594	146.9	—38,516	—46,319	—64,581	—30,936	—64,581
	4 mos.	85	243,331	28,220	312,275	81,988	105,743	17,235	239,346	466,925	149.5	—154,650	—181,142	—254,906	—175,941	—254,906
Central of Georgia	April	1,926	1,025,999	99,238	1,298,721	162,184	262,152	53,546	520,472	1,082,957	83.4	215,764	112,059	100,520	58,354	164,697
	4 mos.	1,926	4,016,930	460,543	5,106,115	638,199	1,079,120	207,803	2,135,998	4,396,694	86.1	709,421	339,227	224,253	141,906	481,003
Central New Jersey	April	681	2,229,414	327,586	2,725,172	201,793	550,376	51,977	1,110,784	2,031,549	74.5	693,623	321,591	178,589	479,439	306,847
	4 mos.	681	8,500,026	1,332,020	10,457,560	797,533	2,080,147	179,604	4,495,780	8,008,655	76.6	2,448,905	1,112,484	496,116	955,996	1,008,430
Central Vermont	April	455	413,804	23,935	483,954	80,292	107,589	13,442	238,971	462,559	95.6	21,395	—1,086	—3,404	47,357	24,894
	4 mos.	455	1,482,024	119,005	1,755,684	284,310	379,584	56,334	929,491	1,741,586	99.2	14,098	—59,423	—53,261	11,749	60,154
Chesapeake & Ohio	April	3,106	9,202,709	304,585	9,862,357	1,044,523	1,918,191	197,850	2,197,424	5,675,211	57.5	4,187,146	3,195,588	3,055,285	1,901,221	3,761,374
	4 mos.	3,106	38,914,938	1,009,927	41,170,205	4,086,777	7,788,097	752,056	9,250,978	23,148,541	56.2	18,021,664	14,125,222	14,664,880	11,132,975	17,483,058
Chicago & Eastern Illinois	April	931	983,205	87,912	1,230,156	142,626	220,721	55,018	478,405	956,765	77.8	273,391	198,391	58,535	—48,867	108,312
	4 mos.	931	4,207,172	407,077	5,216,931	554,065	939,642	221,366	2,043,680	4,008,479	76.8	1,208,452	908,452	336,044	264,632	535,493
Chicago & Illinois Midland	April	131	260,036	1,072	267,767	25,824	52,844	16,217	66,065	180,883	67.6	86,884	71,355	73,938	62,273	87,526
	4 mos.	131	1,115,775	5,945	1,147,603	99,811	226,909	69,977	311,143	778,900	67.9	368,703	309,002	307,284	299,426	361,803
Chicago & North Western	April	8,355	5,193,195	678,874	6,588,568	1,237,529	1,838,185	153,631	2,744,379	6,315,258	95.9	273,310	—400,974	—498,761	234,813	—85,154
	4 mos.	8,355	20,269,796	2,906,881	26,053,852	3,848,167	6,440,973	603,259	11,813,787	24,048,619	92.3	2,005,233	—468,953	—1,324,675	414,375	343,197
Chicago, Burlington & Quincy	April	9,014	5,742,110	532,558	7,051,198	1,192,751	1,414,139	231,749	2,690,492	5,874,624	83.3	1,176,574	491,195	109,774	269,242	491,697
	4 mos.	9,016	24,187,250	2,239,943	29,415,463	3,286,771	5,541,651	872,408	11,297,756	22,409,497	76.2	7,005,966	4,492,272	3,102,016	1,150,293	4,633,837
Chicago Great Western	April	1,512	1,318,989	50,002	1,469,701	195,122	202,926	51,749	534,896	1,036,743	70.5	432,958	351,302	179,384	94,165	221,075
	4 mos.	1,512	4,707,673	189,635	5,270,938	887,654	821,737	210,825	2,297,487	4,426,875	84.0	844,063	569,550	—136,197	—173,527	28,460
Chicago, Indianapolis & Louisville	April	572	686,062	61,070	841,790	76,031	218,236	29,004	328,174	687,381	81.7	154,409	110,521	4,942	—50,994	46,477
	4 mos.	572	2,807,326	204,775	3,376,044	286,157	786,444	114,390	1,350,447	2,676,117	79.3	699,927	554,993	143,917	—146,617	310,523

Continued on next left-hand page

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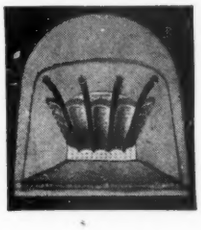

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Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1936—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr. & retir. 1936	1935	Before depr. & ret.
Chicago, Milw., St. Paul & Pacific	April	11,136	$6,911,253	$525,425	$8,193,945	$1,052,349	$1,666,744	$198,574	$3,106,818	$6,342,087	77.4	$1,851,858	$1,137,858	$695,999	$326,142	$1,143,527
	4 mos.	11,126	27,564,698	2,037,612	32,652,687	3,898,760	6,481,680	783,788	13,548,581	26,015,091	79.7	6,637,596	4,085,596	2,116,654	629,061	3,911,934
Chicago, Rock Island & Pacific	April	7,574	4,745,268	553,764	5,876,673	845,281	1,531,138	195,408	2,524,626	5,489,800	93.4	386,873	—112,320	—455,024	302,871	—96,223
	4 mos.	7,574	18,026,562	2,236,894	22,564,749	2,765,706	5,679,545	757,331	10,359,399	21,121,209	93.6	1,443,540	—349,136	—1,479,528	—709,342	—31,783
Chicago, Rock Island & Gulf	April	626	228,093	25,935	331,717	62,984	36,916	16,065	132,208	275,069	82.9	56,648	32,995	—20,940	—8,212	—16,918
	4 mos.	626	940,885	108,882	1,347,019	195,521	134,090	63,833	509,161	1,006,412	74.7	340,607	258,201	65,630	—69,685	82,052
Chicago, St. Paul, Minn. & Omaha	April	1,648	1,132,548	115,986	1,349,251	190,000	247,184	33,473	635,840	1,184,921	87.8	164,330	56,268	—50,212	—38,513	—359
	4 mos.	1,648	4,529,887	469,628	5,384,395	648,168	987,736	134,296	2,946,394	5,031,678	93.4	352,717	—36,036	—452,225	—173,334	—252,538
Clinchfield Railroad	April	309	473,893	4,013	483,267	40,840	122,380	17,471	101,563	296,775	61.4	186,492	152,779	172,694	150,550	216,288
	4 mos.	309	2,062,948	15,955	2,100,991	156,661	446,210	69,080	423,406	1,156,295	55.0	944,696	786,672	912,096	694,546	1,086,512
Colorado & Southern	April	1,023	488,803	24,067	560,604	56,901	112,871	13,029	213,506	430,689	76.8	129,915	65,366	45,314	—23,655	76,914
	4 mos.	1,021	1,777,346	99,376	2,088,038	217,205	436,063	49,215	900,334	1,739,693	83.3	348,345	105,906	38,692	—153,956	165,462
Ft. Worth & Denver City	April	902	423,665	38,438	460,560	40,642	78,584	19,386	153,858	328,027	71.2	132,533	97,462	67,408	27,749	84,995
	4 mos.	902	1,700,309	145,203	1,841,935	142,944	335,991	68,058	604,988	1,293,561	70.2	548,374	420,637	300,139	41,699	371,295
Columbus & Greenville	April	167	75,420	5,308	85,678	17,850	13,070	3,641	40,720	85,367	99.6	311	—2,189	—3,505	2,309	—714
	4 mos.	167	296,002	22,426	338,578	67,043	56,389	14,746	144,006	322,284	95.2	16,294	3,644	—1,288	—18,979	9,883
Delaware & Hudson	April	831	1,809,826	78,953	1,983,638	302,704	536,412	43,717	759,907	1,775,155	89.5	208,483	64,769	66,675	231,734	157,810
	4 mos.	831	7,313,928	365,260	8,009,844	1,079,354	2,018,881	175,889	3,184,134	7,003,437	87.4	1,006,407	505,629	583,947	348,114	956,007
Delaware, Lackawanna & Western	April	984	3,248,857	549,578	4,264,045	311,601	734,554	115,204	1,820,216	3,168,983	74.3	1,095,062	760,062	729,915	613,152	952,541
	4 mos.	991	12,194,731	2,270,961	16,197,229	1,218,524	3,129,472	452,426	7,603,026	13,153,807	81.2	3,043,422	1,704,422	1,658,412	1,443,336	2,549,733
Denver & Rio Grande Western	April	2,584	1,722,320	134,470	1,946,630	377,828	575,305	51,699	636,132	1,719,759	88.3	226,871	24,972	—47,268	39,968	49,097
	4 mos.	2,584	6,461,861	419,324	7,224,276	823,658	2,166,408	196,459	2,521,745	6,044,720	83.7	1,179,556	452,341	298,086	408,025	683,714
Denver & Salt Lake	April	232	145,831	7,202	162,019	32,470	72,417	2,068	46,068	162,588	100.4	—569	—21,859	19,552	63,646	24,469
	4 mos.	232	882,981	34,019	950,658	100,159	249,495	8,584	236,337	632,391	66.5	318,267	243,341	380,427	327,041	401,921
Detroit & Mackinac	April	242	42,568	2,125	50,542	7,401	9,758	932	21,475	42,844	84.8	7,698	15,054	12,110	9,414	15,075
	4 mos.	242	142,650	11,930	176,184	28,078	40,628	3,638	90,071	175,673	99.7	511	358	—11,490	—8,421	369
Detroit & Toledo Shore Line	April	50	329,997	.....	331,560	39,795	24,592	7,679	73,766	153,470	46.3	178,090	147,502	93,868	63,733	99,427
	4 mos.	50	1,493,324	.....	1,500,418	100,423	104,887	30,830	346,625	612,275	40.8	888,143	737,680	489,624	431,563	511,861
Detroit, Toledo & Ironton	April	472	664,013	371	677,183	61,028	107,921	10,362	136,375	343,566	50.7	333,617	262,570	224,475	284,802	246,320
	4 mos.	472	2,872,442	939	2,922,727	226,920	352,525	42,082	601,259	1,316,656	45.0	1,606,071	1,302,451	1,136,808	1,537,596	1,223,829
Duluth, Missabe & Northern	April	559	139,930	1,961	168,264	118,708	212,276	3,498	145,766	524,679	311.8	—356,415	—408,665	—410,300	—408,436	—335,267
	4 mos.	559	380,785	10,307	474,702	438,097	820,913	14,339	558,846	2,012,134	423.9	—1,537,432	—1,717,665	—1,711,928	—1,556,659	—1,411,802
Duluth, Winnipeg & Pacific	April	178	94,879	2,255	100,179	22,426	18,745	1,786	39,945	87,272	87.1	12,907	5,260	—11,523	—14,464	—8,404
	4 mos.	178	461,101	8,382	480,073	69,579	78,254	7,000	200,386	372,128	77.5	107,945	77,556	7,784	—35,102	20,399
Elgin, Joliet & Eastern	April	434	1,471,946	160	1,650,488	141,983	326,598	14,755	520,526	1,052,612	63.8	597,876	456,978	449,400	206,837	524,312
	4 mos.	434	5,303,000	160	5,911,780	506,862	1,227,060	54,725	2,081,053	4,055,094	68.6	1,856,686	1,385,288	1,314,093	969,905	1,614,700
Erie	April	2,297	5,757,582	403,364	6,671,080	530,338	1,260,472	167,871	2,412,320	4,674,249	70.1	1,996,831	1,506,694	1,226,702	901,999	1,551,020
	4 mos.	2,297	22,483,115	1,669,946	26,012,510	1,990,683	5,034,109	668,211	10,011,126	18,911,441	72.7	7,101,069	5,496,048	4,607,927	3,790,882	5,907,213
New Jersey & New York	April	45	15,376	47,889	65,389	4,912	16,304	544	48,394	71,976	110.0	—6,587	—11,833	—27,958	—37,962	—27,947
	4 mos.	45	62,698	192,857	262,905	18,324	58,991	2,531	200,250	286,438	109.0	—23,533	—41,229	—103,442	—151,200	—103,398
New York, Susquehanna & Western	April	215	236,978	23,157	273,126	25,927	35,905	4,573	119,102	198,516	72.7	74,610	49,524	20,671	44,654	26,443
	4 mos.	215	1,099,406	95,356	1,249,251	99,697	149,663	19,019	549,328	871,571	69.8	377,680	287,794	185,631	119,757	209,043
Florida East Coast	April	712	593,070	211,179	904,682	99,888	120,189	22,712	277,312	576,563	63.7	328,119	245,962	190,723	251,888	248,231
	4 mos.	712	2,217,783	1,375,281	4,033,753	393,087	525,912	97,059	1,215,743	2,491,800	61.8	1,541,953	1,230,144	1,043,280	683,111	1,272,900
Fort Smith & Western	April	249	51,528	917	55,771	14,686	9,133	5,342	21,111	53,062	95.1	2,709	909	—5,600	—8,129	—5,031
	4 mos.	249	240,866	3,221	257,953	58,335	36,524	20,939	82,520	212,058	82.2	45,895	38,695	11,759	—17,198	14,036
Georgia Railroad	April	329	255,045	12,348	293,669	30,723	61,518	17,445	118,972	242,004	82.4	51,665	45,388	50,987	59,801	62,272
	4 mos.	329	991,539	49,455	1,137,693	112,371	232,707	68,558	496,203	964,286	84.8	173,407	148,248	183,632	172,488	229,656
Georgia & Florida	April	408	76,674	1,953	82,762	27,117	15,163	8,249	33,626	89,533	108.2	—61,771	—13,892	—14,815	—9,373	—9,429
	4 mos.	408	329,140	7,816	353,059	87,141	67,474	33,120	136,494	346,661	98.2	6,398	—18,486	—23,804	—13,603	—2,776
Grand Trunk Western	April	1,032	2,009,556	62,586	2,213,368	250,074	381,154	35,065	803,297	1,561,773	70.6	651,595	527,495	454,231	240,278	541,140
	4 mos.	1,032	7,056,290	275,953	7,909,061	775,581	1,494,271	136,945	3,199,654	5,961,330	75.4	1,947,731	1,522,797	1,292,230	720,676	1,690,535
Canadian Nat'l Lines in New Eng.	April	172	105,693	2,542	116,022	45,725	19,652	2,421	60,006	136,692	117.7	—20,670	—38,410	—68,419	—79,757	—65,280
	4 mos.	172	393,874	17,998	447,497	138,822	87,630	9,398	245,543	517,969	115.7	—70,472	—126,659	—231,569	—257,062	—219,864
Great Northern	April	8,250	5,043,580	345,065	5,867,608	406,510	1,011,254	181,766	2,050,420	3,922,986	66.9	1,944,622	1,680,405	1,598,215	1,882,947	1,903,145
	4 mos.	8,250	17,678,172	1,388,164	20,892,730	1,919,704	4,330,239	679,274	8,811,743	16,801,802	80.4	4,090,928	2,317,342	2,038,083	2,008,786	3,274,561

Continued on next left-hand page

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Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1936—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues			Operating expenses					Operating ratio	Net from railway operation	Operating income	Net railway operating income		
						Maintenance of								After depr.& retir.		Before depr.& ret.
			Freight	Passenger	Total (inc. misc.)	Way and structures	Equipment	Traffic	Transportation	Total				1936	1935	
Green Bay & Western	April	234	$121,074	$980	$126,954	$26,156	$14,900	$5,924	$40,779	$91,742	72.2	$35,212	$25,103	$19,388	$23,655	$23,443
	4 mos.	234	488,316	3,167	509,553	101,256	62,814	23,122	178,864	382,636	75.0	126,917	92,843	69,456	67,781	85,968
Gulf & Ship Island	April	259	126,700	8,455	149,340	16,291	13,880	3,405	75,693	116,632	78.1	32,708	17,276	6,460	2,000	10,756
	4 mos.	259	417,935	30,938	507,983	72,303	59,191	13,687	245,276	415,786	81.9	92,197	33,603	—5,879	—36,200	10,587
Gulf, Mobile & Northern	April	936	559,385	22,564	605,594	61,784	88,732	37,762	156,533	372,236	61.47	233,358	180,358	115,144	88,773	134,167
	4 mos.	936	2,073,108	87,496	2,252,493	253,679	359,132	142,083	618,352	1,484,611	65.91	767,882	594,103	355,899	169,655	431,898
Illinois Central	April	4,976	6,246,296	690,777	7,719,368	680,369	1,838,947	227,949	2,959,328	6,109,856	79.1	1,609,512	964,022	748,540	1,184,183	1,293,786
	4 mos.	4,977	25,912,814	2,968,698	31,353,388	2,607,161	6,907,475	924,407	12,448,030	24,523,307	78.2	6,830,081	4,505,699	3,778,189	3,910,912	5,979,270
Yazoo & Mississippi Valley	April	1,619	913,496	63,327	1,064,379	93,889	194,388	33,435	437,311	812,549	76.3	251,830	117,304	31,162	—26,468	74,431
	4 mos.	1,619	3,785,885	237,059	4,335,631	363,966	724,019	134,918	1,807,590	3,250,455	75.0	1,085,176	572,293	238,505	—122,212	408,587
Illinois Central System	April	6,596	7,159,792	754,104	8,783,747	774,258	2,033,335	261,384	3,396,639	6,922,405	78.8	1,861,342	1,078,901	788,102	1,165,215	1,377,217
	4 mos.	6,597	29,698,699	3,205,757	35,689,019	2,971,127	7,631,494	1,059,325	14,255,620	27,773,762	77.8	7,915,257	5,069,007	4,048,594	3,819,775	6,419,757
Illinois Terminal	April	508	389,180	67,704	495,393	51,505	64,896	15,877	160,458	310,235	62.62	185,158	148,837	130,408	94,022	149,404
	4 mos.	516	1,524,135	279,385	1,945,864	174,006	262,888	64,239	657,650	1,231,092	63.27	714,772	582,277	505,757	342,804	581,634
Kansas City Southern	April	878	950,877	15,171	1,070,440	94,106	157,460	48,034	288,947	658,234	61.5	412,206	324,206	254,508	71,743	283,307
	4 mos.	878	3,560,221	59,386	4,017,925	347,356	622,765	190,934	1,165,381	2,604,142	64.8	1,413,783	1,087,783	867,362	238,166	981,397
Kansas, Oklahoma & Gulf	April	326	206,823	405	209,872	28,531	22,399	7,693	43,682	102,923	49.0	106,949	84,118	62,696	27,181	64,782
	4 mos.	326	774,118	1,889	785,967	77,965	88,325	30,875	165,523	381,073	48.5	404,894	329,208	262,925	155,224	271,268
Lake Superior & Ishpeming	April	160	36,077	101	39,138	22,139	29,611	595	23,384	81,653	208.6	—42,515	—59,023	—59,107	—13,937	—45,778
	4 mos.	160	142,708	388	152,422	82,602	117,785	2,248	92,508	318,700	209.1	—166,278	—228,650	—233,145	—171,826	—179,979
Lehigh & Hudson River	April	96	135,261	62	135,994	16,204	20,715	4,080	46,474	93,926	69.1	420,068	27,248	15,069	26,314	18,865
	4 mos.	96	500,366	474	504,195	48,274	81,065	14,192	194,027	363,891	72.2	140,304	91,319	41,651	70,644	56,820
Lehigh & New England	April	219	371,839	242	375,231	34,190	68,459	6,197	115,895	239,413	63.8	135,818	108,018	107,627	83,608	125,787
	4 mos.	219	1,265,932	1,201	1,276,658	130,795	281,714	24,876	463,967	964,760	75.6	311,898	245,338	250,923	234,008	323,568
Lehigh Valley	April	1,336	3,538,239	223,875	4,047,502	197,276	678,732	109,098	1,630,090	2,779,579	68.7	1,267,923	1,064,656	869,478	692,627	1,060,852
	4 mos.	1,336	13,654,702	882,444	15,570,676	1,033,120	2,804,282	443,140	7,108,813	12,042,891	77.3	3,527,785	2,716,130	2,005,753	1,840,329	2,773,662
Louisiana & Arkansas	April	606	445,959	8,393	472,439	70,984	68,473	26,269	113,377	295,728	62.6	176,711	133,426	111,911	80,591	126,259
	4 mos.	606	1,689,584	33,870	1,791,537	229,843	257,591	110,342	462,293	1,130,662	63.1	660,875	497,311	421,708	264,003	479,110
Louisiana, Arkansas & Texas	April	255	104,084	186	109,049	28,438	10,062	4,261	30,233	77,895	71.4	31,154	27,078	10,766	—3,004	11,512
	4 mos.	255	369,666	722	385,323	96,968	38,210	18,064	121,032	293,066	76.1	92,257	77,460	16,823	—16,357	19,907
Louisville & Nashville	April	4,999	5,767,204	436,855	6,804,332	738,649	1,496,620	171,310	2,346,634	5,068,134	74.5	1,736,198	1,265,351	1,228,253	926,115	1,576,369
	4 mos.	5,006	24,125,673	1,977,568	28,237,036	2,920,882	6,736,484	745,780	9,785,397	21,476,192	76.1	6,760,844	4,889,309	5,117,796	4,036,508	6,512,246
Maine Central	April	1,046	883,381	54,720	1,032,460	187,967	156,763	11,677	378,167	776,088	75.2	256,372	187,109	113,199	135,866	157,830
	4 mos.	1,046	3,462,525	274,350	4,094,424	786,381	751,952	42,050	1,624,125	3,364,349	82.2	730,075	478,746	183,983	394,808	362,562
Midland Valley	April	351	109,534	5	111,136	16,929	13,708	2,293	33,153	72,040	64.8	39,096	30,296	24,508	20,135	26,633
	4 mos.	358	482,978	80	489,132	47,228	47,122	9,493	124,381	251,657	51.4	237,475	205,426	171,345	92,931	179,832
Minneapolis & St. Louis	April	1,579	655,933	16,595	708,881	93,953	123,386	35,831	291,923	583,179	82.3	125,702	82,362	26,950	18,683	55,834
	4 mos.	1,613	2,424,185	49,869	2,612,769	316,509	483,642	138,589	1,231,045	2,312,958	88.5	299,811	154,617	—36,652	—123,124	79,934
Minn., St. Paul & S. S. Marie	April	4,296	1,731,362	82,118	1,976,707	271,737	375,745	58,676	833,802	1,647,550	83.3	329,157	181,275	62,398	—72,903	164,692
	4 mos.	4,296	6,534,910	321,959	7,437,680	1,076,567	1,460,088	227,701	3,560,762	6,758,571	90.9	679,109	82,978	—387,387	—937,838	21,879
Duluth, South Shore & Atlantic	April	550	154,252	11,125	178,631	29,626	36,962	4,138	77,014	153,145	85.7	25,486	15,098	1,787	12,691	9,555
	4 mos.	550	596,857	41,633	685,419	114,291	134,896	16,743	326,706	613,170	89.5	72,249	32,967	6,023	—33,248	37,223
Spokane International	April	163	49,283	1,333	55,983	11,401	7,480	1,894	20,549	45,989	82.2	9,994	5,066	373	—10,426	2,004
	4 mos.	163	176,965	5,999	204,460	34,899	24,924	7,458	82,609	166,614	81.5	37,846	20,419	6,623	—34,411	12,029
Mississippi Central	April	150	72,342	1,078	75,590	9,983	12,092	6,740	19,843	53,964	71.4	21,626	17,808	13,966	3,107	16,214
	4 mos.	150	265,824	5,120	279,825	44,325	44,947	27,236	79,137	216,905	77.5	62,920	49,360	35,122	—8,892	44,090
Missouri-Arkansas	April	364	78,814	1,039	85,646	17,232	10,170	4,147	28,944	64,915	75.8	20,731	17,712	8,845	7,459	9,677
	4 mos.	364	291,598	4,610	319,907	67,160	39,877	17,556	114,337	256,347	80.1	63,560	54,265	20,393	7,459	23,733
Missouri-Illinois	April	208	87,729	559	89,965	20,399	12,504	2,350	28,603	69,148	76.9	20,817	14,432	5,675	12,287	9,196
	4 mos.	208	308,441	2,307	317,461	66,481	48,322	9,318	114,114	259,082	81.6	58,379	36,466	2,348	27,130	16,432
Missouri-Kansas-Texas Lines	April	3,293	2,087,770	160,795	2,479,582	319,478	485,877	113,129	822,902	1,883,615	76.0	595,967	409,111	209,172	17,596	316,181
	4 mos.	3,293	7,979,926	635,832	9,496,999	1,177,878	1,857,426	451,393	3,496,059	7,546,327	79.5	1,950,672	1,272,241	463,461	—426,270	891,716
Missouri Pacific	April	7,228	5,729,172	350,136	6,672,719	946,941	1,480,760	232,506	2,494,235	5,439,259	81.5	1,233,460	780,517	340,944	213,477	690,719
	4 mos.	7,228	23,807,467	1,440,480	27,517,869	3,336,103	5,663,459	918,941	10,442,065	21,544,621	78.3	5,973,248	4,312,081	2,420,924	591,745	3,822,884
Gulf Coast Lines	April	1,763	1,117,995	34,516	1,207,060	174,613	197,842	42,746	341,.62	802,316	66.47	404,744	336,047	178,802	112,644	212,581
	4 mos.	1,763	4,278,853	128,762	4,724,311	634,570	756,134	172,299	1,357,035	3,105,035	65.72	1,619,276	1,375,997	803,124	425,699	941,279

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"Regular service on our Hiawatha began on May 29, 1935. On November 4 we handled our 100,000th revenue passenger, and on March 31 the 200,000th—a record, by the way, for a new train. The Hiawatha is a profitable as well as a popular venture. Based on the first 10 months of operation, it is earning, above operating expenses, including interest and depreciation, at the rate of almost $700,000 per year."

ALCO

From a talk by H. A. Scandrett, trustee of the Chicago, Milwaukee, St. Paul & Pacific, before the Chicago Traffic Club on May 7.

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1936—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr.& retir. 1936	After depr.& retir. 1935	Before depr.& ret.
International Great Northern	April	1,154	$853,114	$53,512	$1,005,697	$141,652	$189,311	$29,000	$414,611	$829,237	82.45	$176,460	$122,021	$18,666	$1,233	$48,446
	4 mos.	1,154	3,190,569	243,628	3,826,441	554,416	777,254	119,285	1,585,126	3,256,681	85.11	569,760	377,550	—2,815	94,889	117,154
Mobile & Ohio	April	1,201	803,243	23,858	874,032	101,769	198,357	40,614	318,864	700,909	80.2	173,123	121,205	64,964	—50,324	116,265
	4 mos.	1,201	2,918,820	93,827	3,201,476	400,092	687,936	163,786	1,227,972	2,642,946	82.6	558,530	379,293	162,819	—211,837	368,141
Monongahela	April	174	366,640	665	369,096	36,568	31,374	447	70,906	143,024	38.7	226,072	203,299	115,381	19,719	121,162
	4 mos.	174	1,573,956	3,771	1,585,740	133,278	119,681	1,682	349,670	618,133	39.0	967,607	882,311	542,567	379,499	565,685
Montour	April	57	172,535	.....	173,559	13,221	39,985	951	41,302	106,836	61.6	66,723	48,603	65,989	41,969	76,913
	4 mos.	57	634,467	.....	640,172	42,794	152,138	3,756	174,295	403,825	63.1	236,347	172,835	240,039	235,946	283,753
Nashville, Chattanooga & St. Louis	April	1,154	947,940	75,547	1,154,534	162,739	285,532	57,910	448,276	1,020,104	88.4	134,430	88,661	64,395	90,411	108,716
	4 mos.	1,154	3,562,091	379,440	4,455,308	536,455	1,019,454	255,982	1,837,120	3,914,640	87.9	540,668	358,389	293,684	159,387	471,372
Nevada Northern	April	165	37,819	849	43,728	8,323	2,962	827	9,799	25,544	58.4	18,184	10,147	13,071	988	18,993
	4 mos.	165	153,852	5,139	178,789	32,955	12,745	3,420	39,653	104,036	58.2	74,753	44,003	55,166	5,901	78,937
New York Central	April	11,214	20,755,817	4,524,322	28,588,688	2,666,800	6,406,325	521,457	10,554,895	21,568,534	75.4	7,020,154	4,833,754	3,391,596	2,449,336	4,739,960
	4 mos.	11,214	81,791,787	19,628,109	113,874,852	10,679,850	25,261,456	2,075,302	43,612,657	87,542,340	76.9	26,332,512	17,931,300	12,167,585	10,053,662	17,561,765
Pittsburgh & Lake Erie	April	233	1,533,822	57,308	1,635,065	163,083	469,420	25,254	534,400	1,276,908	78.1	358,157	225,781	406,343	190,291	556,789
	4 mos.	233	5,515,244	225,818	5,897,066	510,775	1,907,055	104,891	2,093,182	4,949,880	83.9	947,186	472,872	1,179,381	1,030,777	1,780,774
New York, Chicago & St. Louis	April	1,704	3,129,981	68,919	3,311,031	319,844	431,641	114,415	1,055,534	2,048,972	61.9	1,262,059	1,066,154	817,100	427,860	945,926
	4 mos.	1,704	12,286,385	266,123	12,989,785	1,096,891	1,860,791	456,972	4,497,693	8,419,224	64.8	4,570,561	3,936,656	2,832,684	2,124,815	3,348,803
New York, New Haven & Hartford	April	2,054	3,757,795	1,888,275	6,376,369	902,310	1,110,771	85,953	2,400,617	4,893,322	76.7	1,483,047	993,047	432,531	709,557	727,082
	4 mos.	2,057	14,102,996	7,875,603	24,913,692	3,458,760	4,446,103	334,001	9,821,772	19,699,362	79.1	5,214,330	3,444,330	1,189,323	2,474,138	2,338,751
New York Connecting	April	20	209,985	.....	224,629	9,050	7,729	.....	28,908	46,919	20.9	177,710	142,655	107,674	95,483	107,674
	4 mos.	20	897,972	.....	941,931	34,476	32,161	.....	121,777	193,931	20.6	748,000	609,660	476,277	460,439	476,277
New York, Ontario & Western	April	566	649,772	6,973	703,918	71,178	132,103	12,891	291,321	533,016	75.7	170,902	121,834	93,264	145,469	118,039
	4 mos.	566	2,740,802	26,483	2,985,352	302,662	575,856	44,776	1,334,872	2,367,937	79.3	617,415	443,735	303,432	332,245	402,643
Norfolk & Western	April	2,166	6,438,574	158,787	6,846,315	894,989	1,121,140	122,819	1,550,313	3,905,199	57.0	2,941,116	2,037,734	2,319,955	1,590,267	2,696,276
	4 mos.	2,166	26,407,805	631,220	27,920,857	3,174,505	4,413,773	493,627	6,555,291	15,509,537	55.5	12,411,320	9,011,473	10,098,484	6,799,389	11,594,672
Norfolk Southern	April	834	332,075	6,713	357,318	68,820	49,962	22,667	136,508	300,988	84.2	56,330	25,107	8,293	32,908	19,426
	4 mos.	834	1,264,432	24,091	1,357,570	257,056	198,313	90,685	534,591	1,165,714	85.9	191,856	83,149	27,670	50,916	71,591
Northern Pacific	April	6,727	3,739,998	273,595	4,429,000	580,208	1,046,662	157,957	1,679,491	3,795,265	85.7	633,735	72,831	399,768	326,810	661,418
	4 mos.	6,727	13,926,863	1,088,343	16,602,431	1,783,928	4,219,796	591,627	7,228,135	15,150,718	91.3	1,451,713	—612,487	694,822	130,778	1,737,382
Northwestern Pacific	April	351	171,028	68,111	271,018	44,855	51,088	3,379	148,505	261,536	96.5	9,482	—7,370	—12,847	—38,333	—1,081
	4 mos.	351	688,372	259,921	1,054,320	171,146	200,766	14,827	591,303	1,032,992	98.0	21,328	—27,243	—48,216	—178,469	6,852
Oklahoma City-Ada-Atoka	April	132	45,530	328	48,050	10,697	1,629	660	11,248	26,260	54.7	21,790	18,426	11,047	3,149	11,054
	4 mos.	132	169,384	1,395	179,226	25,280	4,629	2,933	41,730	81,387	45.4	97,839	87,640	68,944	19,610	68,973
Pennsylvania	April	10,442	26,870,463	5,673,084	35,816,508	2,725,328	7,062,009	597,442	11,942,129	24,206,878	67.6	11,609,630	8,648,072	7,776,548	5,759,254	9,602,776
	4 mos.	10,442	99,319,456	22,186,561	133,585,536	12,081,058	27,926,759	2,428,589	49,459,110	99,420,675	74.4	34,164,861	24,777,460	21,577,151	21,785,053	28,692,239
Long Island	April	396	547,055	1,314,993	1,964,530	146,109	361,976	16,116	927,059	1,529,444	77.9	435,086	205,576	77,731	87,781	174,827
	4 mos.	396	2,124,299	5,173,493	7,643,727	617,333	1,443,386	66,085	3,927,087	6,316,839	82.6	1,326,888	664,209	58,451	—160,764	452,154
Pennsylvania-Reading Seashore Lines	April	412	265,396	134,546	419,920	58,682	71,274	9,228	256,461	423,405	100.8	—3,485	—86,355	—153,579	—186,677	—146,286
	4 mos.	412	1,051,767	451,154	1,574,662	260,824	289,115	28,582	1,034,925	1,724,255	109.5	—149,593	—442,251	—716,773	—877,948	—687,601
Pere Marquette	April	2,115	2,597,949	51,968	2,786,213	255,005	548,080	60,135	935,801	1,893,569	68.0	892,644	760,347	656,287	357,469	866,465
	4 mos.	2,115	9,768,804	264,603	10,511,460	1,071,021	2,164,120	252,035	3,926,444	7,790,095	74.1	2,721,365	2,247,364	1,837,427	1,479,344	2,683,111
Pittsburg & Shawmut	April	103	35,087	420	36,469	11,495	13,939	1,019	13,182	42,399	116.2	—5,930	—7,805	—3,738	—9,283	2,073
	4 mos.	103	199,811	1,804	205,311	48,810	69,341	5,618	66,764	204,174	99.4	1,137	—3,711	1,096	37,779	24,340
Pittsburgh & West Virginia	April	138	312,537	.....	330,684	27,752	72,263	17,224	60,272	203,904	61.7	126,780	101,221	132,652	53,195	155,010
	4 mos.	138	1,096,089	.....	1,168,115	100,485	268,784	65,199	240,680	770,053	65.9	398,062	306,576	441,766	311,475	531,729
Pittsburg, Shawmut & Northern	April	190	83,553	21	84,852	20,128	16,943	1,329	29,446	74,093	87.3	10,759	8,533	3,454	14,944	6,167
	4 mos.	190	351,395	202	357,439	60,765	68,323	5,418	134,398	296,025	82.8	61,414	52,456	26,930	18,444	37,653
Reading	April	1,456	4,388,289	347,911	4,948,600	331,946	881,082	71,211	1,820,914	3,336,583	67.4	1,612,017	1,155,301	1,159,180	1,107,331	1,424,477
	4 mos.	1,456	17,293,960	1,375,931	19,530,905	1,478,791	3,436,004	293,246	7,761,398	13,897,917	71.2	5,632,988	4,127,914	4,227,817	3,797,909	5,293,995
Richmond, Fredericksburg & Potomac	April	117	298,175	187,067	641,343	56,911	125,767	8,422	270,577	515,158	80.3	126,185	85,892	26,229	113,830	53,261
	4 mos.	117	1,189,606	895,241	2,642,797	233,672	519,046	35,779	1,108,213	2,102,685	79.6	540,112	387,607	179,121	249,054	287,179
Rutland	April	407	212,660	32,156	300,032	39,128	56,992	10,655	139,422	261,238	87.1	38,794	27,061	26,265	78	38,024
	4 mos.	407	714,854	123,754	1,042,347	187,834	221,392	40,294	568,225	1,074,934	103.1	—32,587	—82,978	—79,155	—80,021	—33,038
St. Louis-San Francisco	April	4,928	3,096,974	221,635	3,654,166	558,651	927,019	105,019	1,348,073	3,119,068	85.4	535,098	235,957	227,664	71,352	497,004
	4 mos.	4,928	12,041,688	914,538	14,247,035	2,115,037	3,545,938	432,784	5,416,734	12,207,157	85.7	2,039,878	962,318	1,070,369	—146,446	2,147,797

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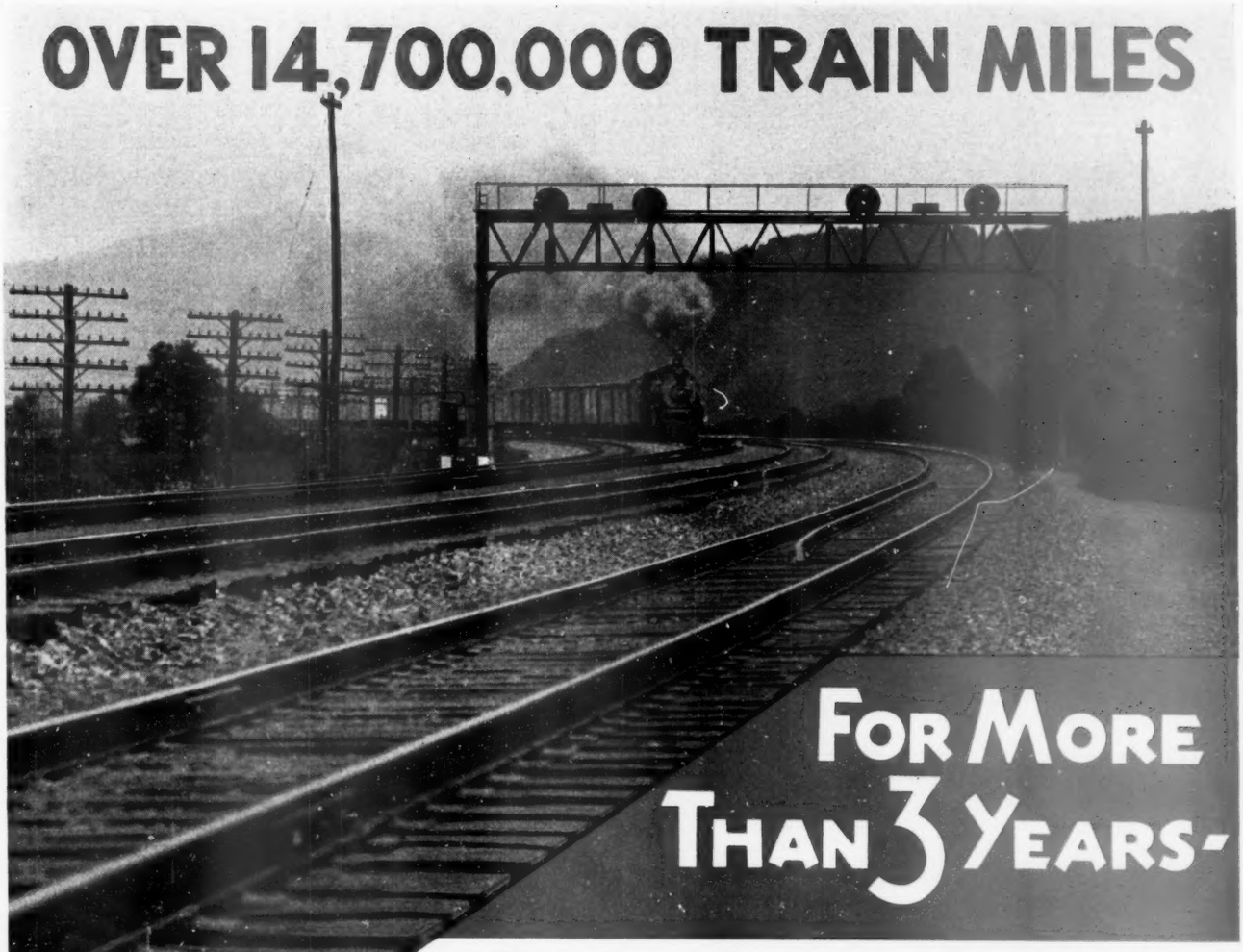
OVER 14,700,000 TRAIN MILES



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"UNION" CODED TRACK CIRCUIT CONTROL

have been proved through long service

Nearly 5,000,000 train miles annually for the first three years of operation have proved the safety, reliability and operating advantages of "Union" Coded Track Circuits. This system represents still another achievement first made available to the railroads by the Union Switch & Signal Company » »

One outstanding operating advantage is that this system insures reliable and proper functioning of the signals under all weather conditions. Construction and maintenance of signal pole lines are eliminated, resulting in substantially reduced maintenance costs. Improved safety and reliability of operation and freedom from maintenance difficulties are additional points to be considered.

This system is equally applicable in steam or electric propulsion territory or where track circuit energy is direct current, alternating current or a combination of both. » » » » » »

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1881 **Union Switch & Signal Co.** 1936

SWISSVALE, PA.

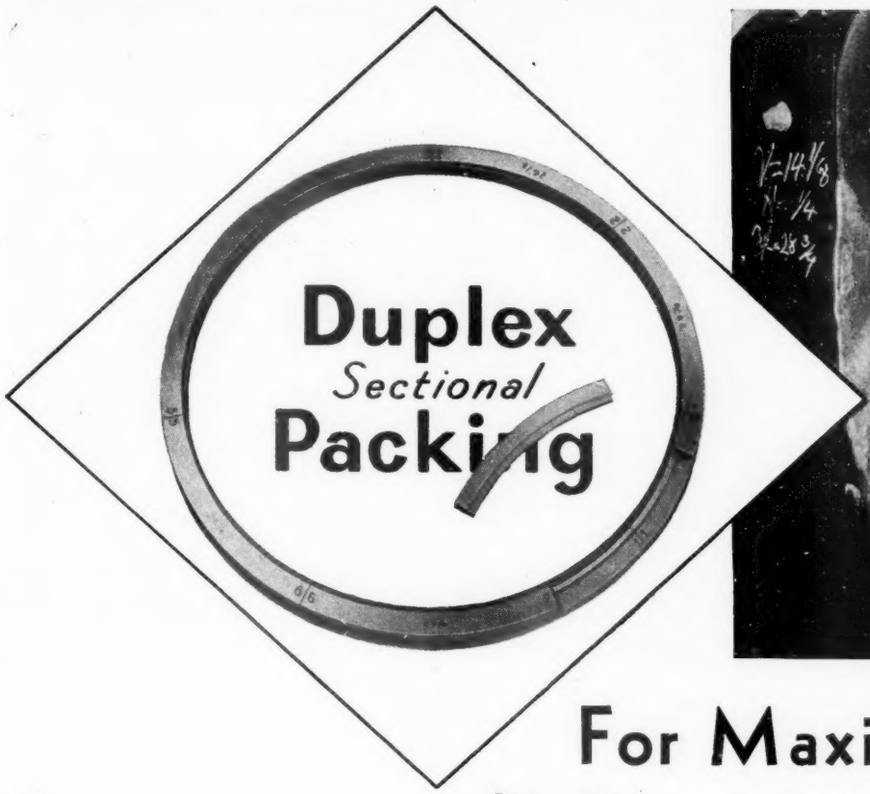
NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1936—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depr.& retir. 1936	After depr.& retir. 1935	Before depr.& ret.
Ft. Worth & Rio Grande	April	233	$34,350	$718	$42,170	$15,694	$8,335	$2,157	$24,312	$53,491	126.8	—$11,321	—$15,620	—$24,188	—$25,973	—$24,138
	4 mos.	233	124,311	2,812	154,572	61,369	31,800	9,124	96,642	211,263	136.7	—56,691	—73,260	—102,029	—110,879	—101,826
St. Louis, San Francisco & Texas.	April	261	89,689	394	93,168	39,495	14,042	5,476	45,797	111,063	119.2	—17,895	—24,136	—58,106	—37,617	—57,940
	4 mos.	261	335,689	2,127	353,520	161,243	53,486	21,874	172,451	435,835	123.3	—82,315	—102,909	—228,697	—192,791	—228,035
St. Louis Southwestern Lines	April	1,784	1,398,916	15,886	1,471,506	186,323	258,136	74,452	477,051	1,066,715	72.5	404,791	314,774	143,580	252,921	194,266
	4 mos.	1,784	5,712,527	62,292	5,995,741	619,620	941,581	298,304	1,886,531	4,019,744	67.0	1,975,997	1,640,070	1,014,282	947,735	1,216,824
Seaboard Air Line	April	4,307	2,650,940	384,763	3,435,045	451,924	678,268	152,929	1,275,945	2,765,526	80.5	669,519	444,519	299,236	933,999	455,655
	4 mos.	4,307	9,994,499	1,996,310	13,438,389	1,797,221	2,677,057	612,991	5,058,900	10,961,820	81.6	2,476,569	1,486,569	955,460	1,543,580	1,581,839
Southern Railway	April	6,641	6,247,564	710,282	7,648,662	962,630	1,395,856	145,610	2,705,279	5,511,314	72.1	2,137,348	1,705,268	1,397,750	1,044,840	1,668,307
	4 mos.	6,641	24,560,402	2,912,114	30,100,608	3,768,485	5,444,956	601,925	10,958,155	21,981,268	73.0	8,119,340	6,334,112	5,203,066	3,890,502	6,285,688
Alabama Great Southern	April	315	440,137	38,974	521,682	88,729	105,188	10,785	167,571	391,855	75.1	129,827	95,548	66,417	16,174	89,650
	4 mos.	315	1,655,074	163,386	1,969,951	329,395	415,928	44,498	648,294	1,514,189	76.9	455,762	320,393	231,886	28,601	324,841
Cinn., New Orleans & Texas Pacific.	April	336	1,200,466	69,392	1,347,352	174,056	256,321	26,559	322,127	826,862	61.4	520,490	423,630	391,834	238,236	441,764
	4 mos.	336	4,425,034	439,364	5,165,738	701,214	928,655	100,145	1,311,128	3,236,768	62.7	1,928,970	1,560,758	1,473,463	960,166	1,673,191
Georgia Southern & Florida	April	397	123,817	34,714	182,656	27,855	36,732	1,894	86,432	160,238	87.7	22,418	9,939	186	12,932	7,246
	4 mos.	397	471,239	233,863	795,523	121,176	147,107	7,[illegible]4	361,407	670,825	84.3	124,698	74,628	43,183	7,340	71,434
New Orleans & Northeastern	April	204	187,147	15,117	219,099	26,230	34,926	5,436	69,769	147,190	67.2	71,909	47,772	25,222	26,992	31,266
	4 mos.	204	715,378	64,477	842,316	116,556	143,166	21,810	283,630	607,283	72.1	235,033	144,526	57,849	28,061	82,054
Northern Alabama	April	100	54,424	1,649	57,859	12,912	1,304	1,241	16,655	33,761	58.4	24,098	19,881	8,175	—3,446	8,245
	4 mos.	100	229,470	6,626	243,453	46,089	5,626	4,815	71,714	135,080	55.5	108,373	92,180	44,053	986	44,335
Southern Pacific	April	8,772	8,942,202	1,479,454	11,310,449	1,186,122	2,091,836	310,763	4,188,394	8,563,928	75.7	2,746,521	1,752,143	1,252,641	1,025,074	1,734,324
	4 mos.	8,773	33,369,128	6,067,079	42,764,709	4,513,071	7,952,001	1,180,051	16,239,576	33,067,914	77.3	9,696,795	6,078,821	4,173,353	3,298,354	6,100,205
Southern Pacific Steamship Lines.	April	....	460,611	21,170	501,491	16,214	89,759	17,979	348,183	490,965	97.9	10,526	—1,988	—2,240	17,713	33,117
	4 mos.	....	1,644,211	60,457	1,774,457	62,854	357,425	68,103	1,300,596	1,863,207	105.0	—88,750	—116,158	—117,165	—194,392	24,192
Texas & New Orleans	April	4,429	2,784,325	246,554	3,268,888	435,883	668,919	114,791	1,079,039	2,526,281	77.3	742,607	461,893	316,572	185,860	457,303
	4 mos.	4,430	10,858,934	963,014	12,812,469	1,675,562	2,517,545	475,223	4,364,951	9,918,781	77.4	2,893,688	1,902,851	1,198,759	681,706	1,760,202
Spokane, Portland & Seattle	April	946	531,059	37,805	617,746	75,708	81,099	9,837	216,776	410,627	66.5	207,119	140,162	79,665	108,559	96,144
	4 mos.	946	1,901,567	134,215	2,230,452	270,197	322,912	34,423	890,496	1,626,730	72.9	603,722	324,058	112,762	192,870	178,781
Tennessee Central	April	286	173,352	5,128	190,113	32,277	28,387	6,159	64,283	140,321	73.8	49,792	40,224	28,604	29,690	34,570
	4 mos.	286	724,449	20,545	792,207	128,113	119,015	22,378	271,268	579,097	73.1	213,110	183,941	136,739	117,946	160,668
Texas & Pacific	April	1,949	1,825,264	190,736	2,199,659	243,115	416,538	72,381	685,927	1,552,432	70.6	647,227	496,465	369,428	488,739	466,716
	4 mos.	1,949	7,013,092	710,554	8,415,811	965,483	1,529,409	282,643	2,605,117	5,908,525	70.2	2,507,286	2,002,873	1,539,479	1,274,913	1,927,965
Texas Mexican	April	162	104,395	374	114,460	17,885	17,039	3,246	37,881	83,526	73.0	30,934	24,457	18,374	31,091	20,277
	4 mos.	162	387,249	1,930	428,332	73,411	61,393	13,258	134,751	310,709	72.5	117,623	95,149	72,447	112,507	79,789
Toledo, Peoria & Western	April	239	194,559	11	197,089	53,079	13,053	16,640	46,461	137,713	69.9	59,376	46,494	28,581	8,602	40,173
	4 mos.	239	728,967	48	738,674	187,935	46,695	66,006	188,236	521,496	70.6	217,178	175,833	109,213	42,902	155,468
Union Pacific System	April	9,828	9,108,904	980,879	11,072,053	1,787,034	2,396,539	330,101	3,654,235	8,918,820	80.6	2,153,233	1,050,555	475,682	895,118	1,004,415
	4 mos.	9,826	35,614,646	3,697,823	42,899,992	5,408,701	9,203,481	1,210,667	15,214,055	34,026,416	79.3	8,873,576	4,797,673	2,817,883	3,318,433	4,933,164
Utah	April	111	69,700	.....	59,800	15,198	22,527	476	17,028	60,177	86.2	9,623	953	3,125	—1,746	12,945
	4 mos.	111	428,662	.....	430,596	64,138	98,330	2,000	103,469	286,598	66.6	143,998	95,048	79,301	33,167	118,582
Virginian	April	619	1,263,471	3,955	1,316,305	99,527	254,909	18,126	221,929	621,326	47.2	694,979	594,979	637,661	384,595	730,991
	4 mos.	619	5,449,773	14,972	5,687,565	397,330	999,941	73,486	982,124	2,583,236	45.4	3,104,329	2,539,329	2,709,200	2,154,561	3,082,029
Wabash	April	2,447	3,282,211	198,604	3,732,812	463,880	666,118	139,134	1,395,117	2,822,312	75.6	910,500	704,032	416,146	547,160	593,876
	4 mos.	2,447	12,984,648	782,916	14,895,826	1,564,220	2,774,788	555,577	5,741,216	11,260,159	75.6	3,635,667	2,894,231	1,728,662	1,632,747	2,441,814
Ann Arbor	April	293	308,709	2,161	319,082	30,136	75,540	11,864	130,435	261,161	81.8	57,921	40,426	26,731	40,831	46,896
	4 mos.	293	1,263,533	10,609	1,303,775	108,124	290,555	46,899	579,124	1,075,645	82.5	228,130	160,412	109,927	151,403	190,571
Western Maryland	April	882	1,224,502	6,608	1,266,387	153,734	304,646	36,415	326,736	870,970	68.8	395,417	295,417	304,419	213,183	399,461
	4 mos.	882	5,139,647	26,687	5,313,659	594,706	1,191,026	147,926	1,371,411	3,504,905	66.0	1,808,754	1,438,754	1,496,048	1,378,567	1,876,183
Western Pacific	April	1,207	975,575	36,561	1,040,148	326,318	232,626	52,860	449,108	1,113,817	107.1	—73,669	—168,018	—236,788	—116,496	—186,415
	4 mos.	1,207	3,609,641	124,370	3,830,176	751,048	800,908	218,862	1,690,556	3,645,684	95.2	184,492	—112,289	—360,745	—268,949	—155,435
Wheeling & Lake Erie	April	511	1,095,050	1,275	1,150,410	200,819	283,789	30,960	334,019	881,566	76.6	268,844	161,490	174,199	88,101	275,627
	4 mos.	511	4,269,728	6,757	4,497,366	567,730	1,242,436	122,005	1,384,336	3,442,609	76.5	1,054,757	657,704	711,289	430,863	1,116,828
Wichita Falls & Southern	April	203	35,646	295	43,189	7,393	6,299	1,598	14,174	32,317	74.83	10,872	7,475	5,184	2,078	7,130
	4 mos.	203	137,116	379	157,587	33,606	23,950	6,574	55,454	132,738	84.23	24,849	12,737	4,842	—997	12,652

Table of Freight Operating Statistics begins on next left-hand page



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Air Furnace

Freight Operating Statistics of Large Steam Railways—Selected Items for the Month of February,

Region, road, and year		Miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (*thousands*)	Car-miles: Per cent loaded	Ton-miles (*thousands*): Gross, excluding locomotives and tenders	Ton-miles (*thousands*): Net, revenue and non-revenue	Number of road locomotives on line: Serviceable: Not stored	Serviceable: Stored	Unserviceable	Per cent unserviceable
New England Region:													
Boston & Albany	1936	373	140,739	146,653	11,014	2,885	68.8	155,499	57,925	57	5	30	32.6
	1935	402	124,228	129,117	9,012	2,789	67.9	149,276	52,722	54	6	36	37.5
Boston & Maine	1936	1,972	284,258	322,690	31,716	9,117	68.3	518,152	197,626	131	3	165	55.2
	1935	2,016	278,917	313,150	30,090	8,754	64.9	507,841	186,846	105	1	164	60.8
N. Y., New H. & Hartf.	1936	2,038	342,571	422,893	22,223	10,811	66.3	607,095	237,744	182	6	102	35.2
	1935	2,045	340,376	413,456	20,726	10,181	62.6	588,775	220,524	181	25	101	33.0
Great Lakes Region:													
Delaware & Hudson	1936	831	234,461	328,195	43,467	7,597	64.1	493,845	242,870	123	130	28	10.0
	1935	835	203,997	281,961	31,952	6,645	61.8	431,267	204,428	101	138	35	12.8
Del., Lack. & Western	1936	992	394,603	451,622	68,852	11,847	65.6	7[illegible]06	311,332	153	1	83	35.0
	1935	992	341,076	383,893	49,292	10,378	63.4	625,447	244,559	154	21	93	34.6
Erie (incl. Chi. & Erie)	1936	2,298	705,630	750,329	45,704	26,981	66.7	1,664,912	701,002	226	24	228	47.7
	1935	2,305	615,108	642,407	37,995	24,321	63.1	1,511,506	585,555	218	81	181	37.7
Grand Trunk Western	1936	1,027	253,617	260,887	3,319	6,227	64.7	372,842	138,674	79	..	60	43.2
	1935	1,007	218,900	222,183	3,119	5,657	59.8	349,893	117,764	68	..	73	51.8
Lehigh Valley	1936	1,318	412,249	447,780	50,348	12,492	66.5	792,322	353,468	147	..	145	49.7
	1935	1,335	380,769	406,865	40,209	10,950	61.9	705,418	286,913	168	8	132	42.9
New York Central	1936	10,789	2,803,700	2,992,660	194,938	86,535	60.6	5,756,231	2,504,835	940	13	550	36.6
	1935	11,066	2,398,257	2,511,436	151,389	76,868	58.9	5,072,409	2,098,545	830	46	636	42.1
New York, Chi. & St. L.	1936	1,674	516,429	522,498	8,273	15,636	65.8	947,179	379,643	157	7	25	13.2
	1935	1,661	412,620	414,600	4,317	13,336	61.0	832,194	317,303	132	46	13	6.8
Pere Marquette	1936	2,081	376,059	389,056	7,717	8,757	63.0	581,213	245,252	111	..	36	24.5
	1935	2,096	337,144	355,338	3,976	8,167	58.8	538,439	201,191	113	4	41	25.9
Pittsburgh & Lake Erie	1936	234	83,730	86,724	43	2,970	57.7	256,711	141,450	36	5	30	42.3
	1935	234	65,135	68,397	....	2,584	55.1	223,100	119,713	27	10	34	47.9
Wabash	1936	2,435	606,203	634,520	14,120	16,770	64.2	1,017,480	376,299	153	14	141	45.8
	1935	2,435	547,918	557,748	10,737	16,014	60.4	961,974	318,181	137	21	173	52.3
Central Eastern Region:													
Baltimore & Ohio	1936	6,367	1,496,480	1,854,709	192,284	41,644	63.4	2,904,582	1,381,080	670	7	632	48.3
	1935	6,321	1,276,190	1,556,708	169,393	35,938	59.4	2,535,747	1,141,881	616	131	560	42.8
Central of New Jersey	1936	681	161,046	182,885	35,608	5,207	60.2	376,253	190,502	65	2	88	56.8
	1935	684	133,070	150,834	30,191	4,327	56.9	312,778	148,090	60	14	84	53.2
Chicago & Eastern Ill.	1936	931	180,092	180,360	3,602	4,388	66.2	287,473	132,130	57	..	52	47.7
	1935	939	165,093	165,669	2,750	3,830	60.8	262,771	114,981	44	6	57	53.3
Elgin, Joliet & Eastern	1936	434	104,532	106,539	2,054	2,432	63.9	188,051	97,434	56	..	31	35.6
	1935	446	85,942	87,633	1,427	2,019	58.0	164,579	82,122	51	7	29	33.4
Long Island	1936	393	32,038	32,890	17,469	282	51.0	21,992	9,726	37	2	13	25.0
	1935	393	31,936	33,061	15,209	274	50.7	22,291	9,114	35	..	21	37.5
Pennsylvania System	1936	9,801	3,053,107	3,501,438	410,422	97,231	61.6	6,835,620	3,156,308	1,436	57	934	38.5
	1935	10,009	2,557,228	2,862,862	324,528	84,140	59.6	5,874,900	2,627,773	1,317	171	962	39.3
Reading	1936	1,449	472,655	523,267	64,662	12,316	61.6	926,581	467,717	222	39	86	24.8
	1935	1,453	395,712	432,347	50,976	10,758	56.2	820,710	388,178	193	54	100	28.8
Pocahontas Region:													
Chesapeake & Ohio	1936	3,050	915,954	980,351	49,799	38,705	56.5	3,313,713	1,838,286	399	29	97	18.5
	1935	3,060	756,204	799,553	34,873	31,425	53.8	2,713,813	1,442,684	370	91	112	19.5
Norfolk & Western	1936	2,145	682,926	726,381	36,731	26,119	59.9	2,204,550	1,183,504	269	56	50	13.3
	1935	2,146	561,368	592,326	31,454	22,000	58.3	1,823,615	955,296	239	106	35	9.1
Southern Region:													
Atlantic Coast Line	1936	5,141	569,904	571,168	7,388	12,037	63.0	645,740	215,442	254	19	144	34.5
	1935	5,148	500,810	503,360	7,486	10,950	62.5	574,066	190,412	258	51	129	29.5
Central of Georgia	1936	1,886	233,086	234,203	3,331	4,824	70.8	264,740	100,524	91	..	33	26.6
	1935	1,886	203,193	203,844	2,788	4,441	71.9	235,147	90,130	102	..	38	27.1
Illinois Central (incl.	1936	6,566	1,535,419	1,557,446	31,357	35,438	64.3	2,358,987	1,044,267	643	1	213	24.9
Y. & M. V.)	1935	6,587	1,300,999	1,307,563	25,180	30,561	61.7	2,022,927	854,916	598	3	324	35.0
Louisville & Nashville	1936	5,007	1,108,214	1,203,261	38,930	24,548	60.1	1,757,293	859,763	340	4	238	40.9
	1935	5,049	920,387	991,943	26,882	20,259	58.5	1,444,572	690,576	315	9	254	43.9
Seaboard Air Line	1936	4,295	463,324	473,196	3,015	11,402	67.9	643,407	236,477	232	1	98	29.6
	1935	4,295	428,564	437,082	2,861	10,177	66.0	582,121	202,002	213	10	121	35.2
Southern	1936	6,596	1,200,648	1,218,618	20,990	25,985	68.0	1,464,897	594,093	460	42	289	36.5
	1935	6,599	1,033,785	1,048,412	18,920	23,098	65.3	1,313,670	512,689	405	66	372	44.1
Northwestern Region:													
Chi. & North Western	1936	8,355	994,420	1,071,808	34,789	22,111	66.8	1,385,602	508,553	475	47	251	32.5
	1935	8,428	843,952	884,728	23,417	20,148	61.3	1,265,791	433,182	414	105	282	35.2
Chicago Great Western	1936	1,458	182,340	190,700	12,354	4,953	66.7	306,051	125,826	67	..	22	24.7
	1935	1,456	210,628	210,668	5,890	5,737	60.1	362,302	131,524	60	2	39	39.2
Chi., Milw., St. P. & Pac.	1936	11,115	1,294,659	1,413,925	86,971	30,225	63.4	1,961,014	843,940	529	49	121	17.3
	1935	11,120	1,089,471	1,147,510	56,054	27,174	59.4	1,748,271	687,639	383	119	187	27.1
Chi., St. P., Minneap. & Om.	1936	1,637	236,735	274,470	16,201	4,608	63.4	299,974	131,332	102	23	25	16.7
	1935	1,644	190,870	198,577	9,615	3,734	61.6	232,799	93,384	67	51	45	27.3
Great Northern	1936	8,093	729,600	732,746	29,553	18,397	66.8	1,144,668	485,756	345	69	158	29.6
	1935	8,087	631,252	637,448	20,813	18,582	61.5	1,179,872	459 979	336	94	176	29.0
Minneap., St. P. & S. St. M.	1936	4,273	357,633	367,781	5,774	6,945	70.3	401,357	172,530	129	..	23	15.1
	1935	4,274	329,684	334,862	2,812	6,530	62.1	373,612	141,292	125	..	40	24.2
Northern Pacific	1936	6,429	640,019	698,337	49,119	16,512	70.2	974,434	430,051	350	16	79	17.8
	1935	6,416	517,011	570,631	40,573	15,359	64.7	917,751	359,233	329	15	103	23.0
Central Western Region:													
Alton	1936	928	201,775	204,705	2,208	4,175	61.1	275,357	102,945	71	3	29	28.2
	1935	921	169,200	171,410	1,770	3,463	56.2	234,415	83,563	48	3	42	45.2
Atch., Top. & S. Fe. (incl.	1936	13,235	1,554,587	1,665,924	65,081	39,028	64.4	2,374,553	823,253	526	100	368	37.0
P. & S.F. & G.C. & S.F.)	1935	13,307	1,381,297	1,447,551	53,653	36,838	63.5	2,217,679	736,662	478	165	360	35.9
Chi., Burl. & Quincy	1936	8,969	1,362,526	1,443,164	59,629	33,212	62.2	2,063,186	896,141	466	3	76	13.9
	1935	8,971	1,067,298	1,109,188	39,848	26,176	59.6	1,579,533	636,483	457	5	115	19.9
Chi., Rock I. & Pac. (incl.	1936	8,176	1,025,212	1,057,868	7,974	21,973	65.6	1,307,869	504,033	393	8	325	44.8
Chi., Rock I. & Gulf)	1935	8,298	967,561	980,815	4,706	20,930	60.2	1,277,445	440,235	364	37	328	45.0
Denv. & Rio Gr. Western	1936	2,584	248,787	277,538	30,920	6,128	65.3	385,500	164,456	155	7	44	21.4
	1935	2,602	188,904	205,304	20,702	4,824	62.2	303,051	120,777	152	16	54	24.3
Southern Pac.—Pac. Lines	1936	8,596	1,162,793	1,264,000	141,518	37,889	66.0	2,289,478	795,677	443	108	238	30.2
	1935	8,589	992,133	1,069,039	114,037	32,428	61.5	2,009,038	637,531	361	170	262	33.0
Union Pacific†	1936	9,825	1,762,681	1,838,893	111,897	47,309	63.7	2,937,099	1,114,028	624	58	200	22.7
	1935	9,854	1,351,969	1,407,570	83,035	41,119	64.2	2,425,911	856,264	585	115	199	22.1
Southwestern Region:													
Mo.-Kans.-Texas Lines	1936	3,282	362,526	367,242	5,929	9,292	63.5	549,358	190,515	101	25	79	38.5
	1935	3,282	309,315	311,469	4,542	7,660	61.5	461,245	157,727	82	31	83	42.3
Missouri Pacific	1936	7,201	1,291,785	1,355,906	32,135	32,986	60.8	2,171,096	819,038	354	61	131	23.8
	1935	7,208	986,117	1,011,175	23,978	25,070	60.9	1,603,682	593,309	271	120	176	30.8
St. Louis-San Francisco	1936	4,888	636,027	640,438	8,029	13,110	64.5	785,365	307,275	279	104	65	14.5
	1935	4,999	571,083	575,997	7,477	11,937	61.9	726,622	280,629	266	135	66	14.1
St. Louis Southw. Lines	1936	1,767	283,586	293,655	3,667	7,733	64.9	441,681	145,633	102	7	11	9.2
	1935	1,774	237,374	239,605	3,194	6,258	64.3	353,782	116,431	100	9	11	9.2
Texas & New Orleans	1936	4,415	555,324	557,386	7,613	13,155	64.1	814,347	272,365	207	36	59	19.5
	1935	4,429	484,771	484,973	8,046	11,044	61.9	676,639	225,791	183	65	58	19.0
Texas & Pacific	1936	1,945	260,282	260,282	1,413	7,844	61.4	479,352	157,722	60	62	98	44.5
	1935	1,945	231,143	231,143	1,243	6,683	57.9	420,417	127,641	81	69	71	32.2

NOTE:—Effective with carrier reports for the month of January, 1936, the rules relative to operating statistics of large steam railways were revised with the following effect on this statement: Miles of road operated, number of locomotives on line, and number of freight cars on line were changed from averages for the month to actual figures as of the close of the month. Freight train and locomotive-miles, which formerly applied only to freight trains and the *freight proportion of mixed trains*, based on car-miles, were changed to apply to freight trains and all mixed trains handling more freight-train cars than passenger-train cars. Carriers were not required to rework 1935 figures according to the revised rules, but they have in some cases supplied considerable comparable data. In other cases the figures shown in this statement for last year were restated by the carriers from last years' reports, or inserted from such reports by the Bureau of Statistics.

* Not available.

† Includes Los Angeles & Salt Lake, Oregon Short Line, Oregon-Washington R. R. & Navigation Co., and St. Joseph & Grand Island, leased January 1, 1936.

1936, Compared with February, 1935, for Roads with Annual Operating Revenues Above $25,000,000

Region, road, and year	Number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day
New England Region:													
Boston & Albany 1936	2,251	5,070	7,321	21.1	18,455	1,110	414	20.1	283	20.5	5,354	190	59.1
1935	2,834	3,751	6,585	25.9	20,189	1,204	425	18.9	279	21.8	4,688	169	51.4
Boston & Maine 1936	7,995	9,025	17,020	15.0	23,467	1,829	698	21.7	411	27.8	3,456	125	41.1
1935	8,335	7,031	15,366	14.8	24,733	1,831	674	21.3	402	29.1	3,311	117	45.5
N. Y., New H. & Hartf. 1936	12,382	13,363	25,745	18.0	24,101	1,814	710	22.0	318	21.8	4,022	123	53.0
1935	14,426	11,889	26,315	14.0	24,293	1,757	658	21.7	299	22.1	3,853	122	50.5
Great Lakes Region:													
Delaware & Hudson 1936	6,413	4,200	10,613	4.0	27,459	2,118	1,042	32.0	758	36.9	10,081	127	47.1
1935	11,375	2,725	14,100	3.8	28,894	2,130	1,010	30.8	563	29.5	8,740	123	41.1
Del., Lack. & Western 1936	13,117	7,908	21,025	16.6	27,700	1,883	803	26.3	511	29.6	10,824	164	75.7
1935	15,726	5,475	21,201	12.2	28,914	1,858	727	23.6	426	26.8	8,806	160	57.9
Erie (incl. Chi. & Erie) 1936	17,959	16,488	34,447	5.5	36,822	2,381	1,003	26.0	731	42.3	10,521	121	57.3
1935	24,084	13,114	37,198	7.0	39,780	2,472	958	24.1	560	36.8	9,073	110	50.5
Grand Trunk Western 1936	3,794	8,659	12,453	15.5	25,991	1,489	554	22.3	382	26.5	4,656	130	65.1
1935	4,560	8,225	12,785	15.7	29,046	1,609	541	20.8	322	25.9	4,178	116	56.7
Lehigh Valley 1936	10,843	11,947	22,790	7.0	31,383	1,976	881	28.3	550	29.2	9,247	146	58.8
1935	13,886	6,329	20,215	10.2	31,285	1,905	775	26.2	493	30.4	7,674	162	51.5
New York Central 1936	102,170	74,230	176,400	17.9	30,632	2,079	905	28.9	495	28.2	8,006	126	72.8
1935	*	*	181,313	19.3	34,352	2,137	884	27.3	413	25.7	6,773	117	62.9
New York, Chi. & St. L. 1936	6,076	9,689	15,765	4.0	30,757	1,840	737	24.3	847	53.0	7,819	115	96.3
1935	8,866	7,303	16,169	3.6	34,848	2,018	770	23.8	707	48.7	6,824	102	78.3
Pere Marquette 1936	8,802	9,779	18,581	4.5	22,963	1,546	652	28.0	453	26.8	4,063	122	91.5
1935	10,617	6,603	17,220	3.0	26,158	1,599	598	24.6	473	28.8	3,429	109	81.2
Pittsburgh & Lake Erie 1936	13,567	10,835	24,402	43.7	41,844	3,075	1,695	47.6	194	7.1	20,860	106	42.7
1935	15,793	9,716	25,509	45.0	44,222	3,433	1,842	46.3	168	6.6	18,296	110	34.4
Wabash 1936	9,770	11,569	21,339	3.8	29,914	1,707	631	22.4	608	42.2	5,329	148	72.0
1935	12,454	9,297	21,751	3.9	35,262	1,774	587	19.9	527	43.9	4,668	126	61.5
Central Eastern Region:													
Baltimore & Ohio 1936	64,806	25,861	90,667	19.0	24,008	1,978	941	33.2	525	25.0	7,480	170	53.9
1935	75,786	20,256	96,042	18.7	25,763	2,017	908	31.8	425	22.5	6,452	161	47.2
Central of New Jersey 1936	10,909	12,042	22,951	28.7	26,448	2,430	1,230	36.6	293	13.3	9,643	151	48.6
1935	12,714	8,571	21,285	26.4	27,338	2,422	1,147	34.2	227	11.7	7,732	148	39.9
Chicago & Eastern Ill. 1936	2,610	4,286	6,896	5.7	25,987	1,611	740	30.1	676	33.9	4,892	152	57.7
1935	3,706	2,773	6,479	12.3	28,475	1,613	706	30.0	643	35.2	4,374	131	56.2
Elgin, Joliet & Eastern 1936	8,084	4,168	12,252	5.9	13,799	1,862	965	40.1	274	10.7	7,740	148	43.0
1935	8,159	3,196	11,355	7.7	16,983	1,956	976	40.7	258	11.0	6,574	128	36.6
Long Island 1936	709	3,406	4,115	2.2	5,125	707	313	34.5	82	4.7	854	370	32.8
1935	779	3,012	3,791	4.5	5,379	711	291	33.3	71	4.2	829	347	28.3
Pennsylvania System 1936	194,772	63,698	258,470	16.6	29,044	2,278	1,052	32.5	420	21.0	11,105	140	55.5
1935	237,985	46,644	284,629	14.1	32,103	2,340	1,047	31.2	331	17.8	9,376	135	46.6
Reading 1936	23,926	14,629	38,555	10.1	21,836	1,967	993	38.0	422	18.1	11,130	168	58.6
1935	31,156	9,377	40,533	7.6	25,213	2,082	985	36.1	338	16.7	9,542	155	48.6
Pocahontas Region:													
Chesapeake & Ohio 1936	30,517	9,359	39,876	1.9	49,029	3,677	2,040	47.5	1,483	55.2	20,785	91	66.9
1935	42,138	8,512	50,650	2.0	49,472	3,633	1,931	45.9	1,025	42.0	16,840	86	51.9
Norfolk & Western 1936	25,529	4,929	30,458	2.1	46,371	3,266	1,753	45.3	1,209	44.5	19,028	115	69.8
1935	33,573	4,016	37,589	2.7	48,097	3,276	1,716	43.4	884	34.9	15,897	112	58.4
Southern Region:													
Atlantic Coast Line 1936	21,385	8,135	29,520	19.0	19,804	1,134	378	17.9	245	21.7	1,445	127	48.3
1935	25,640	7,173	32,813	16.9	19,607	1,148	381	17.4	204	18.8	1,321	125	40.8
Central of Georgia 1936	4,060	3,191	7,251	7.4	20,618	1,143	434	20.8	468	32.4	1,838	133	66.1
1935	6,438	2,522	8,960	25.6	21,402	1,161	445	20.3	359	24.6	1,707	136	52.7
Illinois Central (incl. 1936	36,908	25,396	62,304	31.0	23,779	1,556	689	29.5	592	31.3	5,484	158	64.7
Y. & M. V.) 1935	42,702	15,166	57,868	34.2	25,960	1,566	662	28.0	525	30.4	4,636	144	51.5
Louisville & Nashville 1936	33,191	8,077	41,268	27.4	23,800	1,588	777	35.0	684	32.5	5,921	149	73.6
1935	44,792	7,118	51,910	32.0	24,104	1,575	753	34.1	475	23.8	4,884	150	62.3
Seaboard Air Line 1936	9,701	5,883	15,584	2.6	23,092	1,413	519	20.7	509	36.1	1,898	132	49.6
1935	10,690	5,347	16,037	4.1	22,157	1,379	479	19.8	442	33.7	1,680	131	45.4
Southern 1936	22,933	18,293	41,226	13.0	19,627	1,234	501	22.9	483	31.1	3,106	169	53.4
1935	27,611	14,944	42,555	15.0	20,689	1,280	499	22.2	435	30.0	2,775	157	45.2
Northwestern Region:													
Chi. & North Western 1936	37,964	33,197	71,161	6.8	18,603	1,405	516	23.0	260	17.0	2,099	178	49.4
1935	40,390	21,136	61,526	7.8	22,654	1,505	515	21.5	244	18.5	1,836	145	40.3
Chicago Great Western 1936	1,811	6,722	8,533	2.5	21,461	1,692	696	25.4	579	34.2	2,976	185	78.7
1935	2,757	2,886	5,643	5.3	31,502	1,722	625	22.9	785	56.9	3,226	143	77.3
Chi., Milw., St. P. & Pac. 1936	43,605	27,573	71,178	3.4	20,738	1,534	660	27.9	416	23.5	2,618	166	74.0
1935	51,170	15,815	66,985	3.1	25,406	1,613	634	25.3	367	24.4	2,209	135	62.4
Chi., St. P., Minneap. & Om. 1936	3,478	7,668	11,146	9.7	14,007	1,284	562	28.5	438	24.2	2,767	163	70.5
1935	2,078	7,038	9,116	11.7	17,755	1,222	490	25.0	357	23.2	2,029	141	46.0
Great Northern 1936	36,328	11,152	47,480	8.3	21,283	1,588	674	26.4	352	19.9	2,070	173	44.9
1935	42,163	9,168	51,331	8.3	27,884	1,875	731	24.8	318	20.9	2,031	143	39.0
Minneap., St. P. & S. St. M. 1936	11,411	5,777	17,188	6.3	15,691	1,135	488	24.8	349	20.0	1,392	148	83.6
1935	13,589	3,646	17,235	6.1	17,325	1,138	430	21.6	294	21.9	1,181	126	72.2
Northern Pacific 1936	27,259	5,463	32,722	12.4	22,013	1,531	676	26.0	432	23.6	2,307	194	57.3
1935	34,441	4,011	38,452	11.6	26,975	1,783	698	23.4	326	21.5	2,000	165	58.3
Central Western Region:													
Alton 1936	2,388	6,445	8,833	26.4	29,557	1,374	514	24.7	405	26.9	3,824	143	69.3
1935	3,172	5,818	8,990	28.6	30,844	1,389	495	24.1	323	24.3	3,239	135	68.7
Atch., Top. & S. Fe. (incl. 1936	66,746	11,894	78,640	11.4	28,825	1,530	530	21.1	356	26.2	2,145	140	60.5
P. & S.F. & G.C. & S.F.) 1935	75,783	10,169	85,952	13.2	30,261	1,608	534	20.0	304	24.0	1,977	131	53.3
Chi., Burl. & Quincy 1936	25,842	18,675	44,517	10.9	24,210	1,523	662	27.0	694	41.4	3,445	158	95.7
1935	33,459	11,909	45,368	9.5	26,821	1,487	599	24.3	500	34.5	2,534	136	71.1
Chi., Rock I. & Pac. (incl. 1936	24,943	16,226	41,169	12.0	20,908	1,281	494	22.9	428	28.4	2,126	170	50.8
Chi., Rock I. & Gulf) 1935	31,434	11,119	42,553	21.4	23,216	1,322	456	21.0	366	28.9	1,895	152	48.1
Denv. & Rio Gr. Western 1936	11,867	3,106	14,973	7.2	22,511	1,559	665	26.8	375	21.4	2,195	173	51.1
1935	13,170	2,463	15,633	6.2	24,735	1,612	642	25.0	281	18.0	1,658	164	36.4
Southern Pac.—Pac. Lines 1936	33,806	22,151	55,957	9.7	32,567	1,982	689	21.0	483	34.8	3,192	110	61.0
1935	34,641	22,299	56,940	9.4	32,994	2,034	645	19.7	402	33.3	2,651	111	53.9
Union Pacific† 1936	38,860	18,217	57,077	14.5	32,972	1,680	637	23.5	661	44.0	3,910	149	76.3
1935	44,521	15,544	60,065	17.2	36,879	1,807	638	20.8	505	37.7	3,103	138	59.2
Southwestern Region:													
Mo.-Kans.-Texas Lines 1936	4,864	4,647	9,511	3.8	28,194	1,520	527	20.5	681	52.3	2,002	109	63.1
1935	5,697	3,136	8,833	3.3	27,325	1,492	510	20.6	632	49.9	1,716	100	57.9
Missouri Pacific 1936	14,443	22,942	37,385	3.5	28,866	1,689	637	24.8	771	51.1	3,922	146	86.9
1935	18,762	17,953	36,715	3.8	29,919	1,632	604	23.7	578	40.1	2,940	135	64.6
St. Louis-San Francisco 1936	17,041	6,726	23,767	6.8	23,226	1,238	484	23.4	446	29.5	2,168	160	49.9
1935	21,846	4,674	26,520	8.2	23,572	1,274	492	23.5	378	26.0	2,005	144	44.6
St. Louis Southw. Lines 1936	3,130	3,214	6,344	4.9	28,298	1,565	516	18.8	798	65.2	2,842	110	84.7
1935	3,438	2,712	6,150	7.6	28,506	1,497	493	18.6	682	57.0	2,345	101	71.1
Texas & New Orleans 1936	7,527	11,562	19,089	7.2	27,093	1,480	495	20.7	484	36.4	2,127	95	64.9
1935	7,314	10,794	18,108	7.0	25,823	1,406	469	20.4	436	34.5	1,821	97	57.4
Texas & Pacific 1936	2,231	4,653	6,884	3.7	30,082	1,844	607	20.1	803	65.1	2,796	94	40.8
1935	3,131	3,995	7,126	5.6	29,655	1,822	553	19.1	598	54.1	2,343	93	37.6

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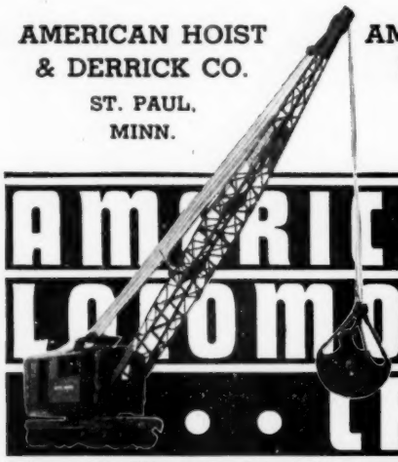

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